REPORT RESUMES

ED 011 036 VT 001 098
PROGRAM DEVELOPMENT AND RESEARCH, REPORT OF A NATIONAL SEMINAR ON AGRICULTURAL EDUCATION (OHIO STATE UNIVERSITY, AUGUST 9-13, 1965).
BY- TAYLOR, ROBERT E.
OHIO STATE UNIV., COLUMBUS, CTR. VOC. AND TECH. ED
REPORT NUMBER STUDY-1 PUB DATE 13 AUG 65
EDRS PRICE MF-$0.27 HC-$7.64 191P.

DESCRIPTORS- *LEADERSHIP TRAINING, *PROGRAM DEVELOPMENT, *EDUCATIONAL RESEARCH, *SEMINARS, *AGRICULTURAL EDUCATION, STATE DEPARTMENTS OF EDUCATION, OFF FARM AGRICULTURAL OCCUPATIONS, PILOT PROJECTS, PROGRAM EVALUATION, EDUCATIONAL CHANGE, ADOPTION (IDEAS), INNOVATION, VOCATIONAL AGRICULTURE TEACHERS, LEADERSHIP, STATE PROGRAMS, COLUMBUS

THE MAJOR PURPOSE OF THE SEMINAR WAS TO PROVIDE AN OPPORTUNITY FOR STATE LEADERS TO COOPERATIVELY FORMULATE PLANS FOR INITIATING AND IMPROVING STATE RESEARCH AND DEVELOPMENT PROGRAMS. ATTENDING WERE 68 STATE AND NATIONAL LEADERS IN AGRICULTURAL EDUCATION, VOCATIONAL EDUCATION AND SUPPORTING DISCIPLINES FROM 31 STATES. THEY CONSIDERED THE STATE LEADERSHIP ROLE IN (1) RESEARCH AND DEVELOPMENT PROGRAM PLANNING, (2) OUTSIDE RESOURCE UTILIZATION, (3) PILOT PROGRAM PLANNING, CONDUCT, AND EVALUATION, (4) NEW PROGRAM ADOPTION, (5) FUND SOURCE IDENTIFICATION, AND (6) REGIONAL RESEARCH PROGRAM REVIEW AND PLANS. PRESENTATIONS INCLUDED--"THE NEED FOR STATE PROGRAMS OF RESEARCH AND DEVELOPMENT," "DEVELOPING COMPREHENSIVE STATE PROGRAMS OF RESEARCH AND DEVELOPMENT," "UTILIZING OUTSIDE RESOURCES IN RESEARCH AND DEVELOPMENT," "OPPORTUNITIES AND RESPONSIBILITIES FOR RESEARCH AND DEVELOPMENT," "DEVELOPING PROPOSALS FOR FUNDING RESEARCH AND DEVELOPMENT PROJECTS," "ARE WE ASKING THE RIGHT QUESTION," "PROMISING RESEARCH DIRECTIONS IN OFF-FARM AGRICULTURAL OCCUPATIONS," "PRIORITY AREAS FOR PROGRAM DEVELOPMENT IN AGRICULTURAL EDUCATION," STATE LEADERSHIP RESPONSIBILITIES IN PLANNING AND CONDUCTING PILOT PROGRAMS," AND "EVALUATION OF PILOT PROGRAMS." (JM)

ED011036

# Report of

# A National Seminar on Agricultural Education

# PROGRAM DEVELOPMENT AND RESEARCH

## AUGUST 9 TO 13, 1965

**The Center for Vocational and Technical Education**
**The Ohio State University**
**Columbus**

VT 001098

The Center for Vocational and Technical Education has been established as an independent unit on The Ohio State University campus with a grant from the Division of Adult and Vocational Research, U. S. Office of Education. It serves a catalytic role in establishing a consortium to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach, and interinstitutional in its program.

The major objectives of The Center follow:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To stimulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research to improve vocational and technical education in institutions of higher education and other appropriate settings;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, research specialists, and others) through an advanced study and in-service education program;

6. To provide a national information retrieval, storage, and dissemination system for vocational and technical education linked with the Educational Research Information Center located in the U. S. Office of Education;

7. To provide educational opportunities for individuals contemplating foreign assignments and for leaders from other countries responsible for leadership in vocational and technical education.

Vocational Education Leadership Study No. 1

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

# REPORT

# OF

# A NATIONAL SEMINAR ON AGRICULTURAL EDUCATION

## "PROGRAM DEVELOPMENT AND RESEARCH"

The Center for Research and Leadership Development
in Vocational and Technical Education

August 9 to 13, 1965

The Ohio State University

Columbus, Ohio

# ACKNOWLEDGEMENT

The Center gratefully acknowledges a grant from The Sears-Roebuck Foundation to underwrite the expenses of this seminar.

## TABLE OF CONTENTS

Page

Preface. . . . . . . . . . . . . . . . . . . . . . . . . . . . v

Participants . . . . . . . . . . . . . . . . . . . . . . . . . vii

Consultants. . . . . . . . . . . . . . . . . . . . . . . . . . xii

P'RT I - Seminar Guidelines. . . . . . . . . . . . . . . . . . 1

The Need for State Programs of Research and Development
Robert E. Taylor, Director . . . . . . . . . . . . . . . . . . 3

PART II - Presentation by the Consultant Staff . . . . . . . . . 11

Developing Comprehensive State Programs of Research and Development
Lloyd J. Phipps. . . . . . . . . . . . . . . . . . . . . . . . 15

Utilizing Outside Resources in Research and Development
Orville E. Thompson. . . . . . . . . . . . . . . . . . . . . . 24

Opportunities and Responsibilities for Research and Development
Duane M. Nielsen . . . . . . . . . . . . . . . . . . . . . . . 34

Developing Proposals for Funding Research and Development Projects
John K. Coster . . . . . . . . . . . . . . . . . . . . . . . . 66

Are We Asking the Right Questions?
Lester S. Kellogg. . . . . . . . . . . . . . . . . . . . . . . 79

Promising Research Directions in Off-Farm Agricultural Occupations
Glenn Z. Stevens . . . . . . . . . . . . . . . . . . . . . . . 97

Priority Areas for Program Development in Agricultural Education
H. Neville Hunsicker . . . . . . . . . . . . . . . . . . . . . 100

State Leadership Responsibilities in Planning and Conducting Pilot Programs
Marvin G. Linson . . . . . . . . . . . . . . . . . . . . . . . 103

## TABLE OF CONTENTS

Page

Nebraska's Plan for Pilot Programs
Glen H. Strain. . . . . . . . . . . . . . . . . . . . . . . 116

Evaluation of Pilot Programs
G. L. O'Kelley, Jr. . . . . . . . . . . . . . . . . . . . . 127

Facilitating the Change Process in Agricultural Education
Daryl Hobbs . . . . . . . . . . . . . . . . . . . . . . . 139

Factors Affecting the Adoption of Educational Innovations by Teachers of Vocational Agriculture with Attendant Implications for Facilitating Change
James E. Christiansen . . . . . . . . . . . . . . . . . . . 158

A Strategy for Change
S. S. Sutherland. . . . . . . . . . . . . . . . . . . . . . 171

# PREFACE

It has been said that there never was a better climate or greater urgency for replanning programs of agricultural education. The new Vocational Education Act, with funds for both program development and research, gives emphasis to the need for state leadership to carefully plan comprehensive, continuing state programs of research and development.

Relative success in these areas will be determined in large measure by the quality of long-range planning and leadership exerted by state staffs. State programs of research and development should be initiated to evaluate present efforts, to stimulate the improvement and extension of agricultural education, and to provide a systematic means of developing and refining promising program innovations. We are concerned not only with identifying more efficient and effective ways of serving agricultural education needs, but also with increasing our effectiveness as state leaders in accelerating the adoption of improved programs.

The major purpose of the seminar was to provide an opportunity for state leaders in vocational agriculture and vocational education to pool their resources and thinking in formulating plans for initiating and improving state programs of research and development.

During the seminar, participants addressed themselves to such key questions as the leadership role of state staffs in:

1. Developing plans for comprehensive, continuing state programs of research and development;
2. Utilizing outside resources to assist in program development and research;
3. Planning, conducting, and evaluating pilot programs;
4. Facilitating the adoption of new programs in agricultural education;
5. Identifying sources of funds for program development and research activities;
6. Reviewing and planning regional research programs.

For a more detailed overview of the seminar purposes and setting in which these purposes were implemented, the reader is referred to the presentation, "The Need for State Programs of Research and Development."

Over 68 state and national leaders in agricultural education, vocational education and supporting disciplines representing 31 states met at The Center, August 9 to 13, to focus on their responsibilities in providing leadership to state program development and research.

In reflecting on the seminar, the discussions were characterized by a positive, stimulating spirit of free inquiry. Traditional practices and concepts were questioned and re-evaluated in light of present or future circumstances. The seminar did not attempt to develop policies or establish definite guidelines for program development and research, but, rather, examined alternative approaches. The presentations of the consultant staff constituted the point of departure and framework for the major thoughts introduced for discussion. They should have continuing value to state staffs, graduate students and others as they continue their efforts in this area.

As would be expected in meetings of this nature, the major benefits were derived by the participants as they shared ideas, raised questions, acquired new insights, and broadened and extended their concepts and understandings of state programs of development and research. We believe the interest and enthusiasm kindled during these sessions will spark new interests and thrusts in the states represented at the seminar.

As seminar director, I would like to express my appreciation to the participants for the enthusiasm and cooperation they exhibited throughout the week. Acknowledgement is also due the consultant staff who, through their forward-looking and thought-provoking presentations, added an immeasurable dimension to our deliberations. Mr. Sidney S. Sutherland, Professor Emeritus, University of California at Davis, who served as coordinator-director; Mr. James E. Christiansen and Mr. Robert V. Kerwood, Research Associates at The Center, also merit our thanks for their splendid work during the seminar.

Agricultural education, vocational education, and The Center acknowledge their appreciation to the SEARS-ROEBUCK FOUNDATION for underwriting the expenses of the seminar.

Robert E. Taylor
Director

# PARTICIPANTS

| State | Name | Position |
|---|---|---|
| Alabama | R. A. Baker | Assistant Professor, Vocational, Technical, and Practical Arts Education, Auburn University |
| | W. E. Cooper | Special Supervisor, Vocational Agriculture |
| | J. C. Hollis | District Supervisor. Vocational Agricultural Education |
| | Byron F. Rawls | Subject Matter Specialist, Vocational Agriculture, Auburn University |
| Arkansas | Denver B. Hutson | Head, Department of Vocational Teacher Education, University of Arkansas |
| Colorado | Earl E. Julson | Associate Professor, Agricultural Education, Colorado State University |
| Florida | W. T. Loften | Head, Department of Agricultural Education, The University of Florida |
| Georgia | Ralph H. Tolbert | Chairman, Division of Vocational Education, The University of Georgia |
| Illinois | Gerald R. Fuller | Assistant Professor, Division of Agricultural Education, University of Illinois |
| | Russell Guinn | Interstate Printers and Publishers |
| Indiana | R. R. Bentley | Research Teacher Trainer, Agricultural Education, Purdue University |
| | E. E. Clanin | Head Teacher Educator in Agricultural Education, Purdue University |
| Iowa | C. E. Bundy | Professor, Agricultural Education, Iowa State University |
| | John McClelland | Professor, Agricultural Education, Iowa State University |
| | Ken Russell | Assistant Consultant, Agricultural Education |

| State | Name | Position |
|---|---|---|
| Kansas | Ray J. Agan | Professor, Agricultural Education, Kansas State University |
| Kentucky | Carl F. Lamar | Research Specialist in Vocational Education, University of Kentucky |
| | C. O. Neel | Supervisor, Agricultural Education |
| Louisiana | T. S. Colvin | Area Supervisor, Vocational Agriculture |
| Maryland | V. R. Cardozier | Professor, Department of Agricultural and Extension Education, University of Maryland |
| | Glenn W. Lewis | State Supervisor of Vocational Agriculture |
| Massachusetts | Jesse A. Taft | Senior Supervisor, Agricultural Education |
| Michigan | Raymond M. Clark | Assistant Teacher Trainer, Agricultural Education, Michigan State University |
| | H. P. Sweany | Professor of Education, Michigan State University |
| Minnesota | Harry W. Kitts | Professor, Department of Agricultural Education, University of Minnesota |
| Mississippi | J. Roland Hamilton | Professor of Agricultural Education, Mississippi State University |
| | Willie F. Jackson | Assistant Teacher Trainer, Agricultural Education, Alcorn A. & M. College |
| | Obed L. Snowden | Head, Agricultural Education Department, Mississippi State College |
| Missouri | G. F. Ekstrom | Professor, Department of Agricultural Education, University of Missouri |
| New Hampshire | Neal D. Andrew | Supervisor of Vocational Agriculture |

| State | Name | Position |
|---|---|---|
| New York | Charles W. Hill | Professor, Agricultural Education, Cornell University |
| | Robert E. Norton | Graduate Student, Rural Education Department, Cornell University |
| | James A. Scanlon | Research Assistant, Agricultural Education, Cornell University |
| North Carolina | C. E. Dean | Teacher Trainer, Agricultural Education, A. & T. College |
| | J. W. Warren, Jr. | Assistant Supervisor, Vocational Agriculture |
| Ohio | Harold Anderson | Research Associate, The Center for Vocational and Technical Education |
| | Ralph E. Bender | Professor & Chairman, Department of Agricultural Education, Ohio State University |
| | Herbert D. Brum | Assistant Supervisor, Vocational Agriculture |
| | Leslie F. Crabbe | Assistant Supervisor, Vocational Agriculture |
| | Ramsey M. Groves | Research Associate, The Center for Vocational and Technical Education |
| | Gilbert S. Guiler | Associate Professor, Agricultural Education, Ohio State University |
| | Carlton E. Johnson | Associate Professor, Agricultural Engineering, Ohio State University |
| | Alan A. Kahler | Consultant, The Center for Vocational and Technical Education |
| | J. H. Lintner | Consultant, The Center for Vocational and Technical Education |
| | Paul F. Pulse | Supervisor, Agricultural Education, Ohio State University |
| | Harlan Ridenour | Instructional Materials Consultant, Vocational Agriculture |
| | John T. Starling | Assistant Supervisor, Vocational Agriculture |
| | Warren G. Weiler | State Supervisor, Vocational Agriculture |
| | Willard H. Wolf | Professor, Agricultural Education, Ohio State University |
| | Ralph J. Woodin | Professor, Agricultural Education, Ohio State University |

| State | Name | Position |
|---|---|---|
| Oklahoma | Cleo A. Dupy | Graduate Assistant, Agricultural Education Department, Oklahoma State University |
| | William L. Hull | Assistant Professor, Department of Agricultural Education, Oklahoma State University |
| | Robert R. Price | Head, Department of Agricultural Education, Oklahoma State University |
| | Bill W. Stevenson | Assistant Professor, Department of Agricultural Education, Oklahoma State University |
| | Jimmie Wolf | Graduate Student, Agricultural Education, Oklahoma State University |
| Pennsylvania | Gene Love | Associate Professor, Department of Agricultural Education, Pennsylvania State University |
| Rhode Island | Ray C. Northrup | State Supervisor, Agricultural Education |
| | David F. Shontz | Head, Department of Agricultural Education, University of Rhode Island |
| South Carolina | J. Alex Hash | Assistant Teacher Trainer, Department of Agricultural Education, Clemson University |
| Tennessee | George W. Wiegers, Jr. | Head, Department of Agricultural Education, University of Tennessee |
| Texas | Lewis Eggenberger | Associate Professor, Department of Agricultural Education, Texas Technological College |
| | J. R. Powell | Teacher Trainer, Agricultural Education, Prairie View A. and M. College |
| Virginia | A. T. Adams | Area Supervisor of Vocational Agriculture |
| | John H. Rodgers | Head, Agricultural Education, Virginia Polytechnic Institute |
| | John Foltz | Advertising Manager, National Future Farmer |

| State | Name | Position |
|---|---|---|
| Washington | C. O. Loreen | Teacher Educator, Agricultural Education, Washington State University |
| West Virginia | Joseph K. Bailey | Supervisor, Vocational Program Services |
| | Robert V. Kerwood | Assistant Professor, Agricultural Education Department, West Virginia University |
| | O. Claude McGhee | Assistant Professor, Agricultural Education Department, West Virginia University |
| Wisconsin | James W. Hensel | Assistant Professor, Department of Agricultural Education, University of Wisconsin |

# CONSULTANTS

| Name | Position |
|---|---|
| James E. Christiansen | Research Associate, The Center for Vocational and Technical Education |
| John K. Coster | Professor, Department of Agricultural Education, University of Nebraska |
| Daryl J. Hobbs | Associate Professor, Department of Rural Sociology, University of Missouri |
| H. Neville Hunsicker | Head, Agricultural Education Occupations Branch, U. S. Office of Education |
| Lester S. Kellogg | Director of Economic Research, Deere and Company |
| Roy M. Kottman | Dean, College of Agriculture and Home Economics, The Ohio State University |
| Otto Legg | Research Specialist, Educational Resources Development Branch, U. S. Office of Education |
| Marvin G. Linson | Assistant State Director, Vocational Education, Colorado |
| R. V. Mullen | Director, Youth and Rural Programs, The Sears-Roebuck Foundation |
| Duane M. Nielsen | Director, Educational Resources Development Branch, U. S. Office of Education |
| George L. O'Kelley, Jr. | Professor, Department of Agricultural Education, University of Georgia |
| Lloyd J. Phipps | Chairman, Department of Agricultural Education, University of Illinois |
| Glenn Z. Stevens | Professor, Department of Agricultural Education, Pennsylvania State University |
| Glen H. Strain | State Director, Agricultural Education, Nebraska |
| S. S. Sutherland | Emeritus Professor, Department of Agricultural Education, University of California, Davis |
| Orville E. Thompson | Chairman, Department of Agricultural Education, University of California, Davis |

An outstanding group of national consultants made presentations during the seminar. A question and discussion period followed each presentation. Here, S. S. Sutherland, Emeritus Professor, Department of Agricultural Education, University of California, is awaiting questions from the group concerning, "Developing Comprehensive State Programs of Research and Development," a presentation by Lloyd J. Phipps, Chairman, Department of Agricultural Education, University of Illinois.

# PART I

# SEMINAR GUIDELINES

# THE NEED FOR STATE PROGRAMS OF RESEARCH AND DEVELOPMENT

by

Robert E. Taylor, Director
The Center for Research and Leadership Development
in Vocational and Technical Education
The Ohio State University

In setting the stage for our week's activities I would like to do four things:

1. Review briefly the setting and circumstances which contribute to the rationale for this specific seminar on program development and research;
2. Highlight briefly some limitations and continuing problems in our state research and development programs; in short, present a cursory review of the "state of the art";
3. Look at some of the major concerns in this area as we move ahead in expanding and improving our research and development activities;
4. Overview the organizational structure of this seminar, our purposes, and the manner in which we will address ourselves to these problems and opportunities.

As I have mentioned earlier in other meetings, the focus of this seminar, program development and research, was one of several priority areas identified by The Center Advisory Committee as needing primary emphasis and leadership from The Center during the year. I am sure we can readily see and appreciate some of the factors that contributed to their recommendation.

Through the Vocational Education Act and other federal and private funding sources, we have witnessed a tremendous expansion and development of vocational and technical education programs. Concurrent with this development, we are constantly confronted with the need for improving the quality and quantity of our research efforts as a means of providing a constant "growing edge" of knowledge and practice. We also are aware of other educational innovations and program developments that need rapid dissemination, diffusion, and adoption by the "establishment". In short, we appear to be on the threshold of a "new era" in research and development in vocational and technical education.

The ten percent of the Vocational Education Act funds set aside under Section 4(c) for research and training and experimental, developmental, or pilot programs provides considerable thrust and impetus to this area. Through the 4(a) funds to the states and other sources of state fundings, research and development programs are being given additional prominence and support.

PRECEEDING PAGE BLANK NOT FILMED

The approval of 24 state research coordination units in vocational education to be funded at approximately the $100,000 level not only gives additional emphasis and leadership to research and development in vocational education broadly but promises to be the forerunner of state organizational structure, coordination, and planning. We could safely conclude that research and development in our field are literally exploding; that it is feast after famine, the flood following the long drought.

It doesn't seem unreasonable to ask, "Are we equal to the task? Do we have the research and development capacity, the leadership ability to effectively plan, initiate, and conduct comprehensive continuing state programs of research and development?" The challenge to improve the quality and quantity of our efforts in this area gives rise to questions relating to organizational structure, planning and coordination, funding, relationships, involvement of other disciplines and agencies, and so on.

Before we move further in this area, it seems appropriate to review some of our past efforts. Let's look rather quickly at some of the problems or limitations in our current research efforts which restrict our improving the effectiveness of our research and development efforts. In my judgment, these problems and limitations are not unique to agricultural education or vocational education. They are not sharp and discrete items but complex and interrelated ones. They may well be syndromes. Furthermore, I am not saying they exist in all of your states (or in any of them, for that matter), but based on experience and observation, they seem to apply broadly. Think about them. Determine if they have implications for our discussion this week, for your situation.

The first syndrome is the widespread misunderstanding of research--what it is, how it functions, what it can do, what it cannot do. Many fail to appreciate the full implications of the research and development process. In many instances we have failed to recognize that research and development encompass a wide range and level of activities--problem identification, design, basic research, development, field testing, and dissemination, to mention a few. There are several steps in the complete process and in many instances we have not included these essential steps; hence, we have become prematurely disenchanted or have condemned research broadly. Perhaps we have failed to properly appreciate what is involved in moving from research design to action programs.

There are some indications that program administrators have expected research to provide "spot answers"; hoping that research could remove their burden of decision-making; hoping that research could take away all doubt or risk of failure.

In other quarters research is viewed as a requirement, rather than a valuable procedure for program improvement and development. Some individuals frequently do not see research as a "working tool". There are also indications that some groups look upon research as their "private domain" and protect it jealously. Conversely, we see other personnel in the total program shirking their responsibilities in this area and assuming no responsibilities for research and development.

Another apparent widespread limitation is failure to recognize the dymanics, the climate which research must have to properly function. We fail to appreciate the need for a continuous, sustained, adequately supported research effort to build up capacity in this area. Too often we wait until our "britches are on fire" and then turn to research to "put out the flame". Not only is it too late but the capacity frequently is not there. It has been starved from a lack of attention and funds.

Perhaps we have too much fear of failure. We seem to expect that all research will pay off big; perhaps if not immediately, then certainly just a little later. We have failed to recognize that knowledge accumulates slowly and that the major breakthrough is the exception rather than the rule. Even then it is probably the result of continuous, sustained, additive research efforts in the area. We cannot expect every study to be an educational penicillin or a pedagogical Salk vaccine. To know what will not work is also of value.

Another major cluster of problems and limitations restricting our research and development efforts is that frequently the wrong people are doing research. A majority of research in agricultural education has been conducted by graduate students who, at best, are interns, not qualified researchers. In addition to limitations of methodology, there are frequently limitations of problem selection. In too many instances problems selected are out of the main stream, concentrated on the past rather than the future, and not significant in terms of their implications for state-wide programs of agricultural education. They are not coordinated with other studies and usually do not contribute to an organized body of knowledge. They do not hook up or add up. They have low generalizability, both from the standpoint of problem setting and research procedures. They provide little help in projecting and improving state programs.

If even a portion of these statements are valid, they should convince us that we can no longer rely solely on graduate students for our research programs. We frequently decry low utilization of research. What can be done to make teachers and other practitioners more intelligent consumers of research, to have them more appreciative of the role of research and development activities in improving and extending our educational services to the broad agricultural industry?

Our past research efforts have been marked by a lack of interdisciplinary and team research. We have failed to reach out and successfully utilize the capacities and talents of researchers in other areas of vocational education and supporting disciplines.

Another aspect of this syndrome of the wrong people conducting research is the time restrictions on our senior staff. Perhaps we have not adequately explored the possibilities of experiment station appointments, of affiliation with and support from college of education research bureaus. We need to secure vocational education funds to establish and maintain definite budgets for research. ("Hard money" is needed in addition to the "quick silver" of proposals and special project funding.) We need more people devoting a majority of their time to research. In this connection, we may have proliferated or "frittered away" our existing research capacity by assigning one-eighth or one-fourth time for research to several staff people. Such small-time allotments are difficult to protect and usually do not yield significant research results. We may need to concentrate our efforts and perhaps rotate research assignments among staff.

Then, too, I would like to raise the question of how many of us who talk about research are really interested in conducting research and development activities, or are we more interested in teaching? Perhaps we will need to give more attention to identifying research talent in our future personnel selections.

Another problem area, it seems to me, is that we may not have involved decision-makers in our research efforts. In many instances we have failed to incorporate one of the basic values of action research in our programs. I refer to the principle of involvement. When we have been able to develop something through research that has had state-wide implications, we have not, in many instances, been able to fit it into the administrative framework for dissemination and implementation.

Experiences also would seem to reveal that we have not given enough attention to coordinating research projects across state lines, that more massive and global confrontations of priority problems through research are needed and feasible.

The foregoing enumeration was not intended to be exhaustive but rather to point our thinking toward some of the basic difficulties and limitations as we focus on organizing for continuing state programs of research and development. I am sure you will think of other problems and limitations that restrict our state-wide research efforts. In any event, we don't need to identify other problems to indicate that this seminar is needed.

I believe it also appropriate to observe that we see many vigorous seeds of change and improvement in many of these problem areas. I am optimistic concerning pending developments in this area.

We too long have viewed research in a narrow and restricted context in relation to state programs of vocational agriculture. We have tended to see it as limited to graduate degree work, as a formal, ritualistic activity outside the main stream of program development and operation rather than as a solid base for program development, improvement, and projection, as a basis for direction finding.

In contrast, industry has long followed the pattern of trying to make its present products **obsolete**. Education has not. We frequently try to prove that what we are doing is right rather than devise means of improving what we are or ought to be doing. I submit that organizing for research is educational leadership; that it is program planning in its broad context. No longer can we afford the luxury of an anemic, isolated, undernourished research and development effort. A broad, comprehensive, organized state research program may well be the heart of state programs in the future.

If we were to try to synthesize the foregoing problems and limitations into a single global problem, we might identify it as the absence of planned state programs of research. We need in each state comprehensive, planned, purposeful means--an organizational structure--for renewing vocational agriculture. We need a division for re-evolution, a section for research and development, a systematic procedure for innovation; not a slipshod, Scotch-tape, chewing gum program. We cannot leave such a vital development to accident or fortuitous circumstances. We must have a carefully conceived, deliberate mechanism built into and coordinated with the state administrative organizational structure of vocational agriculture and vocational education. This mechanism must provide for the several steps in the research and development process. We need a mechanism that will do for agricultural education what the experiment station and extension service have done for agricultural science and technology.

In establishing this structure we need to consider providing a mechanism for:

1. Identifying significant problems.
2. Assigning priorities.
3. Amassing needed resources and personnel (not bootlegging).
4. Evaluating research findings in terms of their implications for state-wide dissemination.
5. Providing for the complete spectrum of needs in research and development (problem identification, design, basic research, development, field testing, and dissemination).
6. Demonstrating promising innovations. We have lost sight of the word "promote" in vocational agriculture. We must recognize what it takes to effect change; concentrate our resources on significant efforts.
7. Coordinating research efforts with other groups in agricultural education, vocational education, and education; within the state and beyond as well (regional projects).
8. Building into the mechanism the team approach to research.

As we approach this needed development we must also give attention to such essentials as:

1. Selecting and developing researchers (specialists).
2. Building into state plans permissive policies and procedures for research and development, freedom for experimentation.
3. Reviewing relationships (supervisors, teacher educators, teachers, vocational educators, experiment stations, educational research bureaus, research coordination units, state departments of education, etc.).
4. Identifying funds. We need to take money off the top for this basic need. What is educationally sound is administratively feasible.

The fundamental problem is: How should agricultural education organize itself on a state-wide basis to effectively meet its responsibilities and opportunities in research and development? How can we systematically and deliberately make agricultural education and vocational education self-renewing? We recognize the urgency of the task. We believe we can make a strong case for an organized approach in terms of its efficiency and effectiveness. Perhaps even more important, what progress can we make here this week in addressing ourselves to this critical problem of planning for comprehensive, continuing state programs of research and development? How can we effectively utilize outside resources to assist in program development and research? What is the leadership role of state staffs in planning, conducting, and evaluating pilot programs? How can state staff members facilitate the adoption of new programs in agricultural education? How can we accelerate the change process? How can we successfully identify and secure sources of funds for program development and research activities? These are some of the primary concerns of the seminar. These are the areas to which we want to address ourselves during the week. These appear to be the major areas that will provide the most help to state staffs in developing long-range programs of research and development.

How, then, do we proceed to maximize the potential benefits from this seminar to your respective states and to improve programs of research and development broadly? First, we want to emphasize the need for and values of your participation. The experiences and insights of eighty people with extensive and diverse backgrounds from thirty-five states constitute a rich resource. We encourage; we want; yes, even require, your best thinking and participation. Everyone's ideas are important, regardless of position. Irregardless of the size of your state program, whether or not you have previously been involved in research and development, your years of experience notwithstanding, we want your ideas and questions. Hopefully, we will have active participants, not passive observers.

You will note that the seminar is structured to provide you with the opportunity to raise questions with members of the consultant staff. We are proud of the consultant staff that has been assembled for this seminar. We believe their unique experiences, coupled with the advanced thought and preparation they have given these problems, will yield real dividends during the week. They have been asked to react to key questions. We hope that you will raise probing, searching questions with these consultants to "tease out" the various alternatives and situational factors inherent in this critical area.

Mr. S. S. Sutherland will be serving as coordinator of the seminar. I am sure that his masterful touch in group processes and his keen insight into the problems underlying this seminar will further contribute to our deliberations and accomplishments.

Further, may I emphasize that this seminar is not a policy-developing or action organization. It is primarily a study group. The outcomes of the seminar will be guides to individuals and states who are free to accept or reject suggestions as they deem appropriate. I would express the hope that we can operate in a spirit of openmindedness, in a free and permissive climate that will permit honest expressions and differences of opinion; that we will set our sights high in terms of quality and standards, focusing on what ought to be rather than merely perpetuating or protecting what we have. I hope, too, that we will recognize and accept our responsibilities as state staff to give the leadership needed for desired changes, redirection, and extensions in agricultural education through carefully conceived and executed programs of research and development.

As we think through our responsibilities in this area, I hope that we can continually be aware of the need for and opportunities to involve and work with representatives of other vocational services and supporting disciplines.

While it may be premature at this point to suggest specific follow-ups for this meeting, it, nevertheless, seems appropriate to at least call your attention to some possibilities at this stage.

1. Report on this seminar to your fellow staff members upon your return to your home state.

2. Review the implications of this seminar for your state. Identify priorities, determine responsibilities, and provide leadership in developing comprehensive, long-range state programs of research and development.

3. Consider a state seminar on this topic, involving appropriate educational, agricultural, and vocational education leaders.

4. Resolve to participate in future Center programs; follow up activities of this seminar.

5. Provide a feed-back to the Center. Keep us posted on developments, activities, and progress in implementing some of the seminar outcomes. Give us your suggestions concerning ways and means The Center can further assist you in this area.

In summary, we have the prospects of a stimulating and rewarding experience during the next week. The essential ingredients are here. We have an urgent task, common concerns, a rich background of experience, an outstanding consultant staff, a favorable climate, and, we hope, an appropriate setting for effective group effort here at The Center. Let's make the most of it.

# PART II

# PRESENTATIONS
BY THE
CONSULTANT STAFF

Maximum interaction for seminar participants was provided by group discussion meetings. Shown here is a discussion group being led by Dr. Ray Cardozier (center, rear row, bow tie), Head, Agricultural and Extension Education, University of Maryland. Consultants shown with the group are: Dr. Duane M. Nielsen (front row, second from left), Director, Educational Resources Development Branch, U. S. Office of Education: George L. O'Kelley, Jr. (front row, fourth from left), Professor, Department of Agricultural Education, University of Georgia: and John K. Coster (left center, rear row, checked jacket), Professor, Department of Agricultural Education, University of Nebraska.

PRECEEDING PAGE BLANK NOT FILMED

Mr. Neville Hunsicker, Head, Agricultural Education Occupations Branch, U. S. Office of Education, addressed a luncheon meeting of the seminar group. His topic was, "Priority Areas for Program Development in Agricultural Education." Seated at the head table (left to right) are: John T. Mount, Vice President for Educational Services, The Ohio State University; R. V. Mullen, Director, Youth and Rural Programs, Sears-Roebuck Foundation, Chicago, Illinois; Robert E. Taylor, Director, The Center for Research and Leadership Development in Vocational and Technical Education.

# DEVELOPING COMPREHENSIVE STATE PROGRAMS OF RESEARCH AND DEVELOPMENT

by

Lloyd J. Phipps
Chairman, Department of Agricultural Education
University of Illinois

## Situation

We are entering a "golden age" of vocational and technical education. Whether or not we in agricultural education participate in this "golden age" and serve the welfare of mankind, as we can serve and as we should serve, will depend on our ability, foresight and imagination in research and development.

The President's Panel on Vocational Education gave agriculture educators and other vocational educators a mandate to research, develop and evaluate their programs. Because of the unfavorable image of agriculture, the Panel, in my opinion, was especially emphatic regarding the necessity to research, develop and evaluate the program in agricultural education. Congress legitimized the mandate of the President's Panel through the Vocational Education Act of 1963 and emphasized in the Act the necessity for research, development and evaluation in agricultural education. Congress has given unparalleled and unequaled opportunities for research, development and evaluation of agricultural education by providing unprecedented amounts of monies for these activities in the Vocational Education Act of 1963, in other public school legislation and in such legislation as The Economic Opportunity Act. They have even earmarked vast sums for research and development in a period when there is a trend away from earmarked funds in Federal assistance programs for education.

Why do we have this sudden and unprecedented interest in research and development, including evaluation, in vocational education? Changes in America have created some compelling reasons. We in education may not be fully cognizant of the changes in the employment situation that are impinging on our society. We in agricultural education have been acutely aware for some time of the effect of automation in farming upon the manpower needs for production. We and other vocational educators, however, may not be fully acquainted with the growing impact of automation on all types of production. If we have been aware of the impacts of automation on nonfarm production, it is doubtful that we have been fully aware of their implications for agricultural education. Changes in nonagricultural manpower requirements in reality will create many opportunities for new educational services in agriculture and it has opened a "Pandora's Box" of demands and opportunities for research, development and evaluation in agricultural education.

Let us take a closer look at the present and emerging manpower situation in America and its implications for agricultural education and for research, development and evaluation in agricultural education. Grant Venn says,

> "The impact of automation on the labor market has been profound. Automatic elevators have recently displaced 40,000 elevator operators in New York City alone. New equipment in the Census Bureau enabled 50 statisticians to do the work in 1960 that required 4,000 such people in 1950. The check-writing staff in the Treasury Department has been reduced from 400 people to four. The airline flight engineer and the railroad fireman may soon disappear completely. Thirty thousand packing-house workers have been automated out of their jobs in the past few years. Enormous machines have helped reduce employment in the coal fields from 415,000 in 1950 to 136,000 in 1962. While construction work has leaped 32 percent since 1956, construction jobs have shown a 24 percent decline."

W. H. Ferry, Vice-President of the Fund for the Republic, says,

> "The unemployed and under-employed are no longer almost exclusively the unskilled, the recent immigrants, the colored, and the groups at the end of the economic scale who have customarily borne the heaviest weight of economic slides. White-collar workers are joining this group as automation reaches the office. There is some reason for thinking that white-collar workers will after a few years comprise most of the growing category of technologically displaced. Herbert Simon has observed that by 1985 machines can do away with all of middle management, if Americans want it that way."

Ralph Bellman, a computer expert for the Rand Corporation,says,

> "Industrial automation has reached the point of no return. The scientific knowledge to automate American industry almost completely is already available and is certain to be used. Banks could cut their staffs in half easily by further automation; the steel and automotive industries could increase their use of automation a hundredfold. Lower and middle management as well as production workers will be displaced for there will be no need for decision-making at that level. Unemployment resulting from automation would be greater right now except that many industries are holding back--at a sacrifice to their profits to avoid increasing the severity of the problem. Self-restraint on the part of industries cannot continue indefinitely. Automation itself will produce few jobs. Two percent of the population will in the discernible future be able to produce all the goods needed to feed, clothe, and run our society."

If the statement that misery loves company is true, we in agricultural education should be in very "loving company" with all other vocational educators in the next few decades. Some agricultural educators in the past decade have developed inferiority feelings because they were engaged in an educational field with rapidly shrinking job opportunities in farming. The recent studies identifying job opportunities requiring agricultural education in areas serving farming have increased morale and our feeling of worth materially. We cannot rest on our laurels, however, because many of these jobs will also disappear with automation.

Gordon Swanson, Professor of Agricultural Education and President of Phi Delta Kappa, made, in my opinion, a very cogent statement in the April issue of the "Phi Delta Kappan." He said that in the future vocational educators should not be content with preparing persons to fill jobs; they should create job opportunities. I assume that he meant that we can create job opportunities by preparing persons for jobs that do not now exist and by helping these persons to develop and obtain employment in these areas.

In planning comprehensive research and development programs in agricultural education to adjust, along with other vocational fields, to the changing manpower requirements of America, we should also be cognizant of the new look in vocational education resulting from recent legislation.

1. At present and in the future various teachers in other vocational fields and even nonschool agencies may "stake claims" to educate persons for jobs we consider agricultural.

2. We are also in a position to "stake claims" for educating persons for jobs which other vocational fields and nonschool agencies have considered as their "backyard."

We need comprehensive research and development programs to determine what we can do best and what help we can obtain from others, or in other words, what they can do better than we can do. The problem of educating for gainful employment in America is so critical that society is going to demand that the specialized talents of various vocational teachers be utilized in the ways that will produce the most good for the greatest number. If we really take seriously the task of educating people for all jobs below the professional level, we will have inadequate staffs in all areas of vocational education for the foreseeable future, and longer. It also appears to me that if we accept the challenge of providing the kinds and types of instruction for gainful employment for all jobs requiring knowledge and skill in plant and animal science and related disciplines that exist or can be created, that we will have a chronic shortage of vocational educators with special competencies in agricultural subjects because of the increasing demands for their services.

Through research and development programs we need to learn where the special talents of present and future vocational agriculture teachers may best be used. There are many tasks in vocational education that teachers of agriculture because of their training are better qualified to do than any other vocational teacher. We need to identify, develop and obtain utilization of these special talents in the schools' total vocational education programs.

In planning comprehensive research and development programs, we also need to be aware of the changing attitudes of society. The pendulum is definitely swinging in America and among educators toward a more favorable attitude regarding vocational and technical education. Whether or not we profit from this changing attitude will depend to a large extent on our research and development programs. Rationalizations for not changing vocational agriculture will only lead us down the path of disaster. In my opinion the best way to protect and extend our quality program of vocational education for farming, and I believe it is essential for society that it be protected and extended, is to become identified with that type of vocational education dedicated to the preparing and upgrading of persons to meet the changing and emerging jobs resulting from automation. Many persons, including many agricultural educators, have not recognized the new and changing nonproduction job opportunities in plant and animal science, in both rural and urban areas, that should receive our attention because no other vocational group is interested in preparing persons for these jobs, or are as well qualified as agricultural educators for providing effective and efficient programs. These emerging and changing jobs are not in farming or related to farming, but they are applied biological science jobs.

## Research and Development Programs Needed

As implied in the previous remarks, we need to get into the "mainstream" of vocational and technical education. An extremely important segment of vocational and technical education in the future will continue to be the education of production workers. It is doubtful that a program in the future, however, will receive maximum public support if its total function is the education of production workers. The attention of the populace is going to be focused on changing and emerging jobs. These jobs are probably going to be in five areas:

a. Research
b. Teaching
c. Learning
d. Services
e. Recreation

It does not take much imagination to recognize that a large and important segment of the total job opportunities in these five areas will require vocational education in agricultural subjects (or applied biological science). The future for agricultural education will be challenging and exciting if we can develop research programs that will chart the course for the cultivating of the opportunities and responsibilities that are on the horizon.

1. If we are to serve society as we should and as society needs to be served, an immediate step is the changing of the image of agricultural education. We have vocational agriculture departments that have broadened their objectives and program, but the teachers, guidance personnel, parents and laymen in these communities still view their vocational agriculture program as a program designed exclusively for educating for gainful employment in farming. The program has changed but the image has remained static. The image held and propagated by certain

economists and the mass media is that we will soon have a minus number of farms and farmers and that it is a waste of taxpayers' monies to maintain vocational agriculture in the school and a waste of the talents of human beings to study vocational agriculture. To combat this image of the future in farming we need to do more than change vocational agriculture programs. We need to change the image of vocational agriculture. Research and development programs may be utilized in changing the image of vocational agriculture.

2. We need to learn how to broaden agricultural education so that it will be serving all who need, for gainful employment, knowledge and skill in plant and animal science and related disciplines.

3. We need to learn how to provide effective education in agriculture, broadly defined, for the everyday affairs of living. This is an educational service to society that will become of increasing importance as all types of work are reduced through automation. It is also important because until the image of vocational agriculture is drastically changed, it is needed as a feeder program for vocational education in agriculture.

4. We need to learn how, as mentioned previously, the specialized talents of vocational agriculture teachers may be utilized profitably and effectively in the schools' total vocational education program in teaching the content common to all types of vocational education for gainful employment. Teachers of agriculture have specialized talents that may be utilized. Dr. Agan, Kansas, has a U.S. Office of Education supported research project designed to provide some information in this area. You should observe carefully the outcomes of this project. The results may be very rewarding.

5. We also need to learn how the specialized talents of other vocational teachers, guidance counselors, nonvocational teachers, administrators and persons from industry may be utilized to decrease the heavy burden of teachers of agriculture.

6. We need to learn how to serve effectively disadvantaged youth and adults. We also need to learn how to serve effectively the upper end of the continuum, or advantaged youth and adults. Agricultural educators have an enviable record of providing effective vocational education for the disadvantaged, the poor, and the down-trodden segments of society. Agricultural educators have had more experience and more success in this field than most other vocational teachers.

   We have often provided education for this group of people under protest and we have often felt that our vocational agriculture departments were being used as "dumping grounds". Providing good vocational education for this segment of society has in certain instances made it difficult or impossible to provide effective vocational education in agriculture for the more advantaged youth and adults. We need to learn how to organize programs so that we can provide good vocational education in agriculture for all groups, and we must organize so that the disadvantaged can receive agricultural education in situations and in an atmosphere which will motivate teachers of agriculture to want to teach the disadvantaged in our society who need and can profit from agricultural education. Much research and development is needed in this area. Almost nothing has been done to date. Dr. Fuller and I have a study supported by the U. S. Office of Education that will be in operation until May 31, 1970, which we hope will provide some of the answers relating to the teaching of the disadvantaged. It is called Project R E D Y.

## Organizing for Research and Development

If we are to meet the research and development needs just mentioned, plus many other needs which time limitations do not permit me to discuss, we must get better organized for research and development. Perhaps all or some of the following activities should be undertaken. (Some states have already utilized many or all of the suggestions I am about to mention.)

1. Research and development committees should be established at all universities preparing vocational teachers. These committees should have representatives from all content areas in vocational education plus access to consultants from subject matter fields. Teacher educators in agriculture can profit from participation on such committees. Such participation will broaden our educational horizons and keep us from being too provincial.

2. Earmarked time should be devoted in agricultural education staff meetings at universities to the planning and analysis of research and development projects. Earmarked time should also be devoted at supervisors' staff meetings to the planning and analysis of research and development projects.

3. Joint meetings of teacher educators and supervisors, with teacher representatives, should be regularly scheduled for the exclusive consideration of research and development in agricultural education.

4. Vocational agriculture teacher associations at both the state and national levels should be encouraged to establish research and development committees and to devote adequate time at association meetings to research and development in agricultural education.

5. The joint state staff of teacher educators and supervisors should establish special ad hoc research and development committees as needed. These special committees should report back to the joint staff.

6. Supervisors should encourage the establishment of a research and development committee with membership from all vocational education content areas. Agriculture education supervisors should be represented on this committee for the same reason given for the representation of teacher educators in agriculture on university vocational education research and development committees.

7. The supervisory staff in agricultural education should initiate the use of citizen and industry committees to advise regarding research and development programs needed. Mr. Guthrie, Chief of Agricultural Education in Illinois, has utilized the services of industry committees in (1) ornamental horticulture, (2) agricultural machinery and equipment, and (3) agricultural supply. Their use has been very worthwhile.

8. Teacher educators and supervisors should encourage action research among teachers. We have often educated and supervised teachers of agriculture with such a "tight rein" that we have virtually eliminated all their initiative and imagination. We are too prone to tell teachers what will not work instead of listening to their plans, and providing supporting encouragement to conduct action research. Only after we have done this should we even mention some of the possible "pitfalls" they may encounter. We have played "God" and have used the vocational education acts and the state plans for vocational education as clubs to stifle action research and to maintain the status quo. We have often"worshipped at the feet of tradition." The result has often been the loss of departments of vocational agriculture in many areas where agricultural education is of vital and growing importance--notably the urban areas. For example, in Illinois the Woodrow Wilson Branch of the Chicago Junior College established for 1965-66 a vocational agriculture program in the ornamental horticulture field. This development is launched after many schools surrounding Chicago dropped their vocational agriculture programs because their service area had become almost completely urban. Encouragement of action research and a more extensive research and development program, which is now possible because of the Vocational Education Act of 1963, may have saved some of these departments of vocational agriculture and their teachers could now be making their contributions in eliminating the unemployment problem in this urban area.

9. Agricultural educators should develop policies that will promote the freedom of researchers. The best way to stifle effective and productive research is to interfere with the freedom of researchers. Good research workers do not work effectively and frequently refuse to operate in an administrative "straight jacket." Some may abuse their freedom, but their number will be few. It is a small price to pay for the increased potential results.

10. Agricultural educators should encourage research by individuals. Individuals are, after all, the only ones that can do research. Do not insist that all or even most research fits into a state "mold" for research. Remember that good researchers are difficult to "harness" into a national, regional or state program of research.

11. Delegate responsibility for a research project to a definite person. I am completely disenchanted with group research projects, cooperative research projects, regional and national research projects. They lead to compromise in design and to mediocracy. We can have effective research cooperation, however, as Duane Nielsen and others promoted such cooperation in the thirty-nine states that conducted the studies of non-farm agricultural job opportunities. There was a common objective, but each researcher was free to design his study as he wished.

12. Encourage and support both project research and program and development research. Project research is an essential ingredient of any total research and development program. Excessive reliance on project research and development, however, often stifles initiative and innovation among research workers. Program research provides a leavening ingredient for a total program of research and development. It assists in the prevention of the excessive bureaucracy and regimentation that may accompany project research and development. It provides "hard" money in contrast to the "soft" money for project research and development. "Hard" money is needed to establish and maintain an adequate staff of research and development workers.

## Summary

Who initiates action? The persons in this audience, your colleagues, and officers of national and state vocational agriculture teacher associations must take major responsibility for initiating action for comprehensive state research and development programs. This is one responsibility that cannot and must not be delegated. It is too important to be neglected. The first step in initiating action is the development or revision of administrative machinery, perhaps along the lines just mentioned. Do not worry about the funding of research and development projects. If you get your administrative machinery for promoting and developing research projects developed properly, and if you obtain well designed research proposals, funds to support your proposed research will be available. Funds from many sources are now available and more funds are on the way. Our main task is to get "geared up" for good research and development. The needs and opportunities are available. The only limitations are our enthusiasm, imagination and ability as research workers and administrators. In looking over the remaining portions of the program for this national seminar, it appears that your enthusiasm and imagination for research and development will be amply stimulated, and you should receive much help in the development of abilities for research and in the administration of research.

# UTILIZING OUTSIDE RESOURCES IN RESEARCH AND DEVELOPMENT

by

**Orville E. Thompson**
Chairman, Department of Agricultural Education
**University of California, Davis**

Many questions come to mind when one begins to think about utilizing outside (and inside) resources in research and development in agricultural education. First of all, the field of agricultural education is increasing in scope. When we're considering the use of resources, are we thinking about the preparation of teachers, the supervision of the programs, classroom instruction, youth programs, or are we including the broad area of human resources in agriculture? To most people, the word resources generally means financial support. However, as one thinks more about resources, he begins to realize that money is only one resource. In one's clamor to secure money, one perhaps bypasses readily available inexpensive resources. Possibly in the final analysis many of these resources which we overlook could yield results which would dwarf that which money can buy. Obviously I mean the human resource of interested people who are available in every community. The lay resource available to agricultural education has only been partially tapped. This in itself would make an interesting theme for a conference, but since this conference is to deal more with the professional and the financial side of resources, that of the lay participation as a resource for research and development will only be mentioned in passing.

This presentation will be in four major sections. The first will be a resume of where we are in research and development. This will be followed by a review of what may be called an expanded responsibility for agricultural education. This expanded concept of agricultural education will be illustrated by a report on the changes of emphasis and philosophy in my institution. Next will be a review of what is happening in other states in terms of resource utilization. The final section will include some suggestions and precautions in the use of the new resources now available.

When looking over the program for this conference, my attention was drawn to the topic, "Are We Asking The Right Questions," which will be discussed by Mr. Kellogg tomorrow. This was particularly intriguing to me and should be to all of us in agricultural education whether our area is supervision, teacher education, administration, or research, for if we're not asking the right questions, the rest of our efforts may be in vain. This becomes particularily significant now, when we're expanding the kinds of questions and number of questions we're asking, and the kinds of people to whom we are directing questions.

It is not news to most of you that we have been asking questions about agricultural education for many years, and during the last decade some have been asking questions that others did not wish to hear, nor were the answers to these questions readily sought. I'm not certain if we asked the right questions then, or if we are asking the right questions now. I'll be interested in what Mr. Kellogg has to say on this topic tomorrow. However, I am certain of one thing. While our previous question-asking was primarily of our colleagues in vocational agriculture, we can no longer restrict ourselves to this group. Really it has been pretty cozy talking among ourselves. We have been able to protect ourselves and our professional standing, and in a way we weren't vulnerable to the outside world. We had a close-knit empire and still do to a certain extent, and I think we could defend our empire in almost any manner or form during its time. Our empire, as many other somewhat self-contained institutions, developed a familiar pattern of characteristics: its members became complacent with success, they obtained their security in the past, they became oblivious to the present, and they repulsed efforts to direct their attention to the future. This began to happen in vocational agriculture in spite of the warning from a minority both inside and outside our ranks. As a result of this and other recent incidents, we have been brought to realize that no longer can we get the complete answers to our questions, whether they are the right or whether they are the wrong questions simply from within our ranks. Those of us in agricultural education have always operated as applied social scientists as we have attempted to bring our knowledge of psychology, sociology, economics, and other basic social sciences to the problems in our field. As such, we have perhaps been guilty of having too little command of any one of the basic fields to make maximum utilization of what is known in that field on the problem we had under study. While it is hard to think of any one situation where we have made gross errors resulting from insufficient knowledge, perhaps the accumulative effect of many **partially** inadequate answers could have had adverse effects upon our progress. Also, we probably have limited the depth of our inquiries because we lacked the knowledge of the basic social science principles involved.

In the answering of questions in areas of education today there is an effort to bring a community of disciplines to bear upon the situation. In the past the physicist, the mathematician, the chemist, and the sociologist weren't particularly concerned with the elementary or secondary school educational process. They were ready and willing to leave this in the province of the educators. Times have change--partially through the efforts of the educator to make others concerned about problems in education, but perhaps most from the scientist's own dissatisfaction with the results the educator was achieving. And we must admit that the scientist has made a positive contribution to education. Taking a key from what has been accomplished in the other fields of education, we have increased our concern about arriving at the best possible solutions to our problems. We believe our colleagues in the social sciences can make a contribution to the solution to problems in vocational education by bringing the resources of their basic discipline to the situation. This will then be one of the outside resources which I will discuss more fully during my presentation.

I have chosen what is happening at my institution as an example in the crossing and mixing of disciplines in the solution of problems in agricultural education. The Davis campus of the University of California is one of the three and by far the largest of the colleges of agriculture in the University system. The major in agricultural education is offered only on the Davis campus. We have a University Dean of Agriculture who is over the three colleges and a Dean of Agriculture for each campus. Our University Dean of Agriculture was appointed three years ago, while our College Dean is completing his second year in that position. While these two men are renowned biological sciencists, they have become increasingly concerned over the obvious lack of attention in California over the years to the human resource (social sciences) in agriculture and farming. Their overall interest plus a similar concern of members of our department under the leadership of our recently retired chairman, Sidney S. Sutherland, has resulted in the following action during the past two years:

1. Eleven-month appointments with Experiment Station titles have become available for our staff members.

2. Financial support for research in agricultural education has become available from the Experiment Station.

3. A statewide program for the study of farm labor has been initiated. This has included the addition of a staff member to coordinate farm foremen training classes.

4. A research program to study the backgrounds, interests, and motivational drives of the migrant farm worker has been launched. A pilot study among strawberry pickers has been completed and a study of the tomato picker is under way.

5. A committee to study the need for research on the socio-economic aspects of agricultural labor has been appointed by the University Dean of Agriculture. This committee includes an agricultural economist, a sociologist, the Director of the Agricultural Extension Service, and the chairman of the Department of Agricultural Education. This committee also serves as an advisory group for farm studies.

6. A staff member has been added to our department to give leadership in adult education. Initially this will include a teacher education program for instructors of adult illiterates and research on the barriers adults encounter in learning. From this we hope to find ways to improve our approach to adult education in vocational agriculture and agricultural extension.

7. A full professor position has been given to our department to expand our program of teaching and research in the social sciences related to agriculture. (We are currently recruiting for this position.) This person is to study the need for research on the human resources in agriculture.

8. A College of Agriculture committee has been named to make recommendations for the development of social science research (other than economics) in the Agriculture Experiment Station. Membership on this committee includes a sociologist, a political scientist, an agricultural economist, a home economist, a geneticist, and an agricultural educationist. This committee has recommended that the agricultural education department provide aggressive leadership in research in the human resource need in agriculture.

9. The 1966-67 budget to the legislature includes a request for four new academic staff positions for the Department of Agricultural Education. These persons are charged with the study of the problems of the migrant and unskilled laborer in the rural and outdoor environment. It is specified that these staff positions include a sociologist, a psychologist, an educator, and a specialist in research and analysis.

10. A reorganization within the Department of Home Economics has resulted in the addition of two staff members in child development and a nursery school to the Department of Agricultural Education. This was an effort to place all the social sciences (except agricultural economics) in the College of Agriculture into one department. The administration believes that we should approach the problems of human resources in agriculture from all levels of education--i.e. from the nursery age child through the adult.

You might wonder what this kind of a program has to do with the traditional function associated with departments of agricultural education--that of preparation of teachers of vocational agriculture in high school, the supervision of these programs, the development of teaching materials, the work with Future Farmers of America, and the host of other activities involved. Yes, we will continue these, but we feel that agricultural education has a charge beyond that of its traditional function. In addition to preparing young men for careers in agriculture we need to study the whole human resource in agriculture. Previously, research efforts in California at least have concentrated on the agricultural technology, the economics of production, marketing, and processing agricultural products. Again in California--which has up to a half-million in the farm labor force--practically no effort has been made to study this important input. We have always subscribed to the objectives in vocational agriculture to prepare young men for farming and agricultural occupations through the application of the principles of science and economics, yet we have bypassed study of perhaps the most important ingredient in agricultural production--and that is the human who does the work--makes the decisions and reaps the profits or the losses from his efforts. We have been given the responsibility for this effort at our institution and the resources to proceed. It is a challenging task indeed.

Needless to say, the assuming of additional responsibilities by a department creates a host of problems, not the least of which is that we must not go outside the resources of our department and college both for financial support and for professional assistance. As you already know, it's usually much easier for us to communicate with our colleagues in education and agriculture than it is with our professional colleagues in the basic social sciences. While we feel we need the assistance of professionals in the basic social sciences, not all of these people share our concern for the study of problems in education. It's not unusual to find these people are already overburdened with their individual research interests, and some question the value of the contribution their discipline can make to the solutions to problems in education. For example, it has taken a number of meetings of our college committee on social sciences in agriculture just to be able to communicate with each other. It becomes immediately obvious in these kinds of situations that those of us in education, in agricultural education, and in agriculture have not achieved general understanding of our problems with our colleagues on "the other side of the campus" or "in other agencies." We have kept to ourselves too long. However, there are times when one wonders if it wouldn't be better or at least much easier to continue to keep to ourselves. I know it would be less frustrating.

Thus, one of the outside resources we're using for research and development in agriculture education is professionals in the social sciences. To date we haven't used these persons directly on problems in vocational agriculture. However, we expect to in the future, for we now have our Deans of Agriculture, the Director of Agricultural Extension Service, The Dean of University Extension, state personnel in adult education, agricultural economists, and others involved in one way or another with our program in agricultural education. The mere fact that we have reason to interact with these people has paved the way for future opportunities to obtain assistance from these individuals in problems in vocational agriculture. One concrete example of benefit came recently when the chairman of the Department of Sociology asked if he could contract for one of the staff members in Agricultural Education to teach an upper division course in his department next spring semester. We have recently affected a joint appointment for a staff member with University Extension to work in the field of adult education. This is the first of its kind on our campus--already there is talk of another. Then it is obvious that the success of our expanded program is dependent upon how well we can utilize outside resources in research and development in agricultural education.

Another outside-inside resource we've used is the procurement of financial support for research. While our operation is in its infancy, this year we'll have funds from sources such as the Experiment Station, Campus Research Committee, Chancellor's Office, University Extension, Economic Opportunity Act, Public Law 88-452 Title II-B, Vocational Education Act of 1963, and from the Cooperative Research Branch of the U.S. Office of Education.

In order to find the extent of use of outside resources in agricultural education by other states a survey was made of a sample of states, and as you might expect, states are using many sources for the procurement of support. The following are but a few examples of how states are capitalizing on resources. Colorado has 4-(c) funds for an occupational study in which they are using the resources of the University research foundation, their guidance and testing service, and their data processing center. This fall Colorado will have a graduate assistantship supported by their State Board for Vocational Education. New York obtains financial support for research from an Agricultural Businesses and Industries Group, from the Council of Agricultural Cooperatives, and from a Ford Foundation grant in teacher education. In Illinois support is obtained from the Production Credit Association and from the Illinois Agricultural Association Youth Committee. Minnesota utilizes the Upper Midwest Research Center, the Veterans Administration, in addition to the State Labor office. In New Mexico one rather small Chamber of Commerce is contributing $2000 for an area occupational study. Pennsylvania obtains outside resources from the Federal Land Bank of Baltimore, Pennsylvania Rural Electric Association, Game Commission of Pennsylvania, Employment Security Agency, and the National Defense Education Act. Maryland obtains funds from the McIntyre-Stennis Act for study of forest recreation opportunities. Missouri has four NDEA fellowships in vocational education. In Iowa assistance is obtained from the Iowa Farm Equipment Club, from the Western Feed and Grain Dealers Association, and from the Iowa Grain Dealers Association. Many others could be mentioned. However, I think this listing gives some idea of the variety of sources now used by agricultural educators. Reference to usual sources such as the state departments of education and experiment stations was purposely omitted. If we were to add those concerns and agencies who support development of agricultural education through the Future Farmer organization, the list would be still more extensive.

However, few of the some twenty states surveyed reported use of resources other than those which provided money or a service such as data processing. Either use of professionals in the social sciences wasn't a common practice or the questions asked weren't clear. I suspect that involvement of persons in other disciplines in our programs of supervision, teacher education, and research in agricultural education is being approached with caution--as perhaps it should be. Several states mentioned that the availability of competent professionals in agricultural education was a limiting factor in their program in research and development.

In reviewing the reports from the various states, the impact of the Vocational Education Act of 1963 was obvious. Most states mentioned they either had resources from this act or they planned to apply for funds from this source. Another example of increased research productivity in agricultural education is the number of reports of studies we have received during the past year.

It now appears to me that we have overcome, or are in the process of overcoming, the three major barriers we've faced in obtaining resources for research and development in agricultural education.

The first of these barriers is fear. For years the leadership in agricultural education consciously and subconsciously was held back by restrictions they felt were placed upon them by the legislative acts from which they received funds. Too few states were brazen enough to forge ahead in the face of criticism. I'm confident that the obsolescence of which we are accused--and too often were guilty--can be attributed to this fear under which we operated. We are conservatively ten years behind in updating our thinking and programs in agricultural education. Now when we need and have the resources to forge ahead we don't have the research to give us guidance. Current legislation should eliminate the basis for any fear of nonconformity to Federal regulations.

The second of these barriers I will call excessive exclusiveness. We were a fraternity and still are, but now at least some restrictions upon membership have been lessened. We're now offering associate membership to some of our colleagues in the social sciences related to our field. Previously, we have been more closely identified with agriculture professionally than we have to the other half of our area--that of education. We should not lessen our intimate contacts with the technical field of agriculture while increasing our bonds with social sciences. Overcoming this barrier has been in two parts: the first and maybe the most difficult was to accept the fact that we didn't have all the answers to our problems and that others in social science may be able to help. Once this was accepted, and this had taken several years, we needed to take the next step--that of taking the initiative in approaching these persons for help. Indications are that we are making progress in this direction.

The third of these barriers which is being overcome is the obtaining of partial, if not adequate, financial assistance. Evidence from the various states suggests that progress is being made in obtaining money from various sources to further the efforts in research and development in agricultural education. Extensive use is already being made of Vocational Education funds--obviously additional funds will be available from the Economic Opportunity Act and others. As has been mentioned previously, obtaining interested and qualified researchers in this field is a problem yet to be overcome and one which this center is and should take the leadership.

Now, what are my personal reactions to this over-all development and the limitations which I see in the direction which agricultural education is taking as it seeks its place in research?

During the past decade the availability of outside resources for research has had terrifying influence upon research in colleges and universities. This money came first to the physical sciences, then to the biological, and now to the social sciences. On the positive side it has enabled the researcher to expand the frontiers of knowledge in the various sciences far beyond what would have otherwise been possible, and, therefore, to the over-all benefit of society is positive. On the other hand let's look at the freedom of the individual researcher and the institution of the University as a free agent in research. Is the individual really doing the research he truly wants to do or is he doing what he knows will be acceptable to the review committee who decides the destiny of his research proposal and maybe his own position? The size of the National Science or the National Health grant or contract the individual controls has become a prestige factor on many campuses. The poor researcher without a grant has to borrow equipment from his grant-rich coworker and stay at home while his coworker jets off to meetings across the U.S. and the world at grant expense to report his findings. I truly hope that those administering the funds from the Vocational Education Act will be able to improve upon the systems to which other federal agencies have become victims. Certainly, there must be another way of allocating funds than by a competitive project basis. I hope it can be found. It might be profitable to look for guidance to the system the U.S.D.A. uses to allocate funds to regional experiment station projects.

Two limitations are implied in the above statement: one is the restriction put upon what the researcher or institution wants to do by the granting agency. Certainly it is recognized that neither public now private granting agencies can allocate funds indiscriminately. They have a responsibility to the public or their boards of directors to insure that the money is used intelligently. Yet, the researcher and the institution needs more freedom than is available in many situations today. Some grantors require detailed quarterly reports and annual renewals which take an unjustifiable amount of the researcher's time from his work. The pump-priming policies of some foundations and agencies, while worthy in intent, may leave institutions unable to continue certain beneficial research centers and like activities once the grantor has fulfilled its original commitment. There have been instances where an institution found it easier to promise to obtain funds to continue an activity than it was to convince legislators and others of the necessity for funds. The insecurity in "soft money" operations has adversely affected the ability to recruit and hold a qualified staff.

A second limitation is the paper work--the delay, the inconvenience, and the frustration involved in obtaining money by the project method. In our state the last review panel had over a thousand proposals to evaluate. The sheer mechanics of handling the proposals has become overwhelming. Many hundreds of man-days were used by professional educators just to review the proposals--and this happens twice a year. In a sense, every vocational program is operating on "soft money." This seems to be inherent in the usage of private as well as public funds.

In moving ahead in obtaining resources for research and development let's keep asking ourselves questions such as the following:

1. Are we maintaining a balance in our program of supervision, teacher education, and research? Are we sacrificing the quality of our teacher education and supervision program to take on added responsibilities in research? What activities are we going to de-emphasize when we add new functions and assume added responsibilities.

2. Where can we obtain new staff and other personnel to conduct research? How can we upgrade the research competency of our present personnel?

3. How can we identify and recruit social scientists who are experts in their fields and also interested in research in agricultural education?

4. How can we get a steady flow of "hard money" for research and development? (How can we obtain "soft money" for projects?)

5. How can we keep the added activities of research and development from adversely affecting the quality of our classroom teaching?

6. Are we researching the most important problems in agricultural education or are we pursuing our individual interests without due regard to the overall needs of vocational agriculture? Are we working toward some basic as well as applied research activities? Can we accomplish both?

7. Are we assuming more responsibilities than it is possible for us to supervise?

These are the kinds of questions we must face as we move ahead in research and development.

By now you perhaps feel that I can see no good in using outside resources for research and development. Quite to the contrary. I realize that we are victims of a system with which we must learn how to work, as change is beyond our power. Outside monies are a real ray of hope in education, as obtaining additional funds from our individual state legislatures appears hopeless. Utilizing outside professionals offers another ray of hope for progress and maturity in agricultural education. However, in our contacts with our colleagues in the basic social sciences let's not give the mistaken impression that we are desperate for help. Let's let them know we have a good program in agricultural education but we think they can help us make it better. Let them know that the public acceptance and public recognition of the value of vocational education has never been better. Let them know that we are asking them to join a winning team and a team that is on the move. So let's see how we can make the fullest use of the financial resources from the Vocational Education Act and other sources to solve problems in agricultural education, and in the planning and in the process, let's consult with and involve our colleagues from the related social sciences in our research activities. Let's see if we can get some regional research activities underway so we can revive what we lost with the elimination of our old regional system. The challenge is here--the resources are available. How we utilize these in the further development of agricultural education is our challenge. First, however, we must find if we are asking the right questions.

# OPPORTUNITIES AND RESPONSIBILITIES FOR RESEARCH AND DEVELOPMENT

by

Duane M. Nielsen
Director of Educational Resources Development Branch
U. S. Office of Education

Gentlemen, it is a distinct pleasure to be a participant in this seminar. I appreciate the opportunity to associate with you again for I have grown to respect you highly through the years. May I take this opportunity to commend each of you for the dedication you have exhibited and contributions you have made to the development of agricultural education programs. It is also pleasant to participate in an activity that is this well planned and administered, particularly when we recognize the significance of this seminar, and comparable activities, to the future of vocational and technical education. The adjustments and expansion in agricultural education necessitated by a dynamically changing agricultural economy will occur, to a great extent, through the efforts of individuals like you who are responsible for the research and development activities which give direction to operating programs.

Several of you were present five years ago at the Regional Agricultural Education Conference in Chicago when I made an illustrated presentation on the needs for vocational education in agriculture and challenges confronting the program. Most of the rest of you here today heard the presentation at subsequent Regional, State or National Conferences. I indicated at that time we were crossing the threshold of what would become the most dynamic decade in the history of agricultural education. It would be dynamic in the extent to which we successfully met the needs for program development or equally dynamic in our failure to do so. One of the priorities identified was the generation of a research and development capability equal to the task.

You may remember the transparency illustrating the little chameleon and its ability to adapt its color to match its environment. It got along fine in life until some enterprising soul put it on a piece of scotch plaid, and it died of frustration. We're not out of that scotch plaid situation. Our kilt may be a little shorter, a little longer, or the plaid may be a bit different in terms of its components, but we are still in a multiplicity of complexities and will be for years ahead. Adequate research and development is a virtual necessity to programming under these conditions.

We are not members of a static society or industry; we are participants in rapid change. Thus, the supreme challenge to research and development in agricultural education is to innovate, experiment, and demonstrate so that programs may more effectively serve a broadened clientele. This task will not permit us to sit on our hands, it will not permit us to stagnate, it will not permit us to build on dead yesterdays - we must concentrate on unborn tomorrows.

This does not mean that we wipe the slate clean, assuming that all we have done has gone by the board with no value. During this conference, as we plan more effective ways of stimulating, conducting, disseminating, and implementing research and developmental activities, we must remember and respect those numerous program strengths that have developed through the years. We should build on those procedures and materials which we have found to be effective; expand them and strengthen them while exhibiting the clarity of vision that will permit us to adapt, to adjust, and to be realistically creative. This is our charter for the future and one of the commitments to take home from this conference. You who are here today have the authority and the opportunity in your positions to respond to this challenge.

With that introduction, may we now focus on the three areas I would like to discuss with you. First, it has been suggested that I review the July 1 reorganization of the Office of Education. Although indirectly related to our topic, discussion of the reorganization does have relevancy to opportunities for research and development in that it will expose the new Office of Education administrative structure for such activities. Second, I would like to give you a progress report on the fiscal 1965 activities of our program operated under Section 4(c) of P.L. 88-210, the Vocational Education Act of 1963. Third, I will suggest some priority areas for research and development concentration in agricultural education.

## Reorganization

When the Department of Education was created by Congress in 1867, the new government unit was authorized to have a Commissioner of Education and three clerks. Total budget: $9,400 a year. Ninety-three years later -- in 1960 -- the Office of Education had 1,100 employees and was running 20 separate education programs with annual expenditures of $500,000,000. Today, the Office of Education is handling more than 40 education programs with more than $3,300,000,000 authorized. It has 1,600 employees.

The statistics demonstrate the obvious. Education has finally come into its own. It is not growing -- it is exploding. Congress has given the U. S. Office of Education major responsibilities for carrying out programs to improve American education.

Early in 1965, the President of the United States -- at the request of HEW Secretary Celebrezze -- appointed a special Task Force "to advise and assist the Office of Education to meet its new program responsibilities." The Task Force, headed by Dwight Ink of the Atomic Energy Commission, included members of both the Bureau of the Budget and the Civil Service Commission.

For three months, the Ink group probed, questioned, investigated, and evaluated. On June 14, 1965, the Task Force completed its work. Four days later, Secretary Celebrezze submitted the Task Force's recommendations to the President and the Cabinet.

The Task Force's recommendations became public as a neat, pencilled chart of organization boxes. Transparency 1 shows the Office of Education administrative structure prior to the reorganization, and Transparency 2 illustrates the new structure recommended by the Task Force, as it became effective July 1.

The Task Force concluded that the Office of Education had become "fragmented and unduly layered" by a patchwork of organizational units created for each new education law -- sometimes for each new title of a law. A reorganization was necessary. But the neat little boxes were only part of the story.

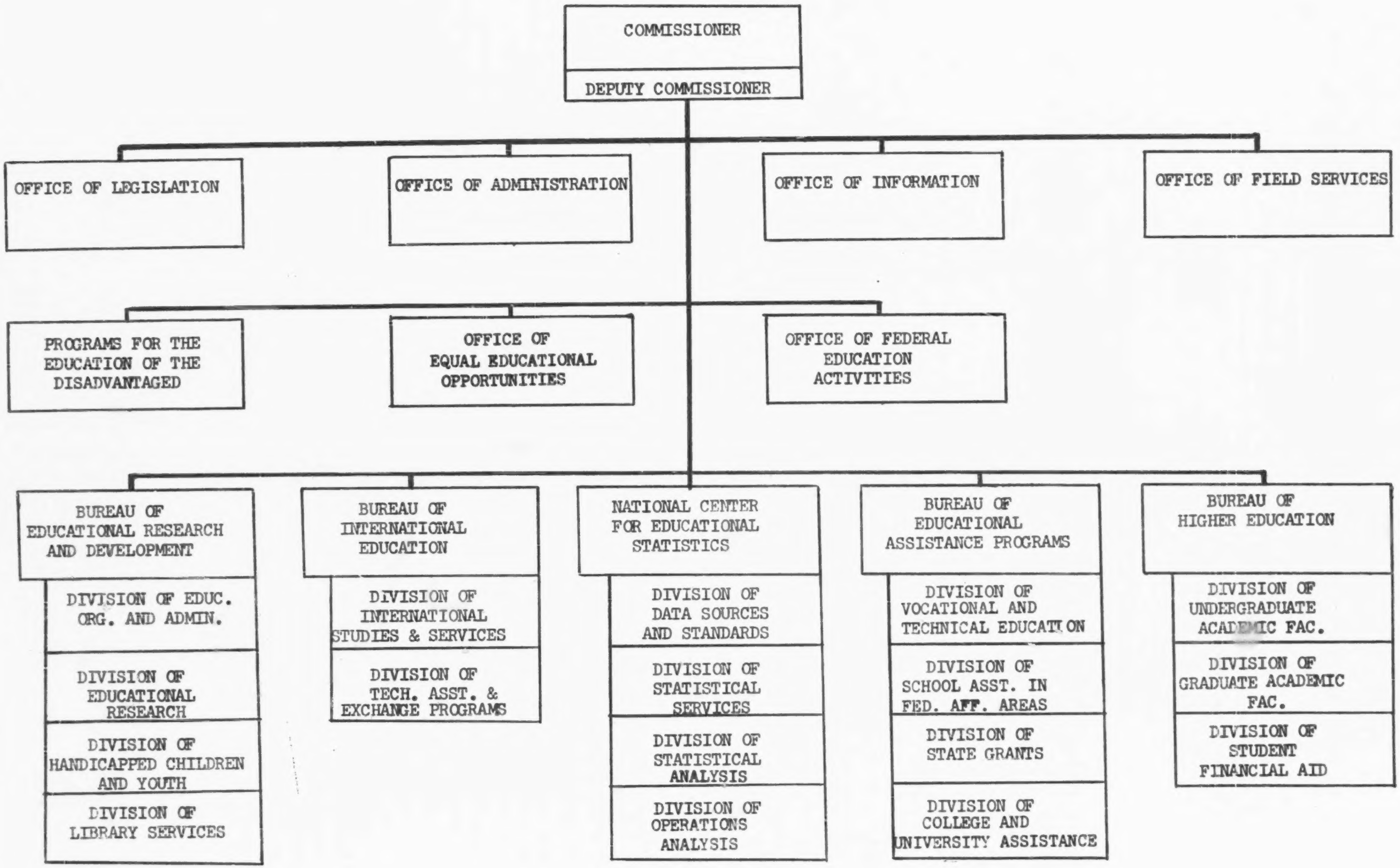
The Ink group singled out a most important element in revamping the Office of Education -- new blood. First priority, said the Task Force, is to recruit new personnel. It urged that competent personnel from disciplines other than professional education be carefully considered for service in the Office of Education. It called for an ad hoc committee under the Deputy Commissioner to identify vacancies, review applications, and set up recruiting teams. It asked for hard-hitting recruiting efforts at both professional and clerical levels.

As the Ink proposals were carried into effect, the Office of Education prepared for orderly chaos. Eight hundred new personnel had to be hired -- including many top-level super-graders. Personnel from defunct bureaus had to be reassigned. Additional office space had to be found in buildings outside 400 Maryland Avenue. The Bureau of Higher Education, for example, went from 187 to 336 positions. Entire bureaus were moved physically to new locations. Other bureaus merely evaporated. Transparency 3 provides additional detail on the reorganization in that it indicates administrative personnel assignments and locations as of July 30.

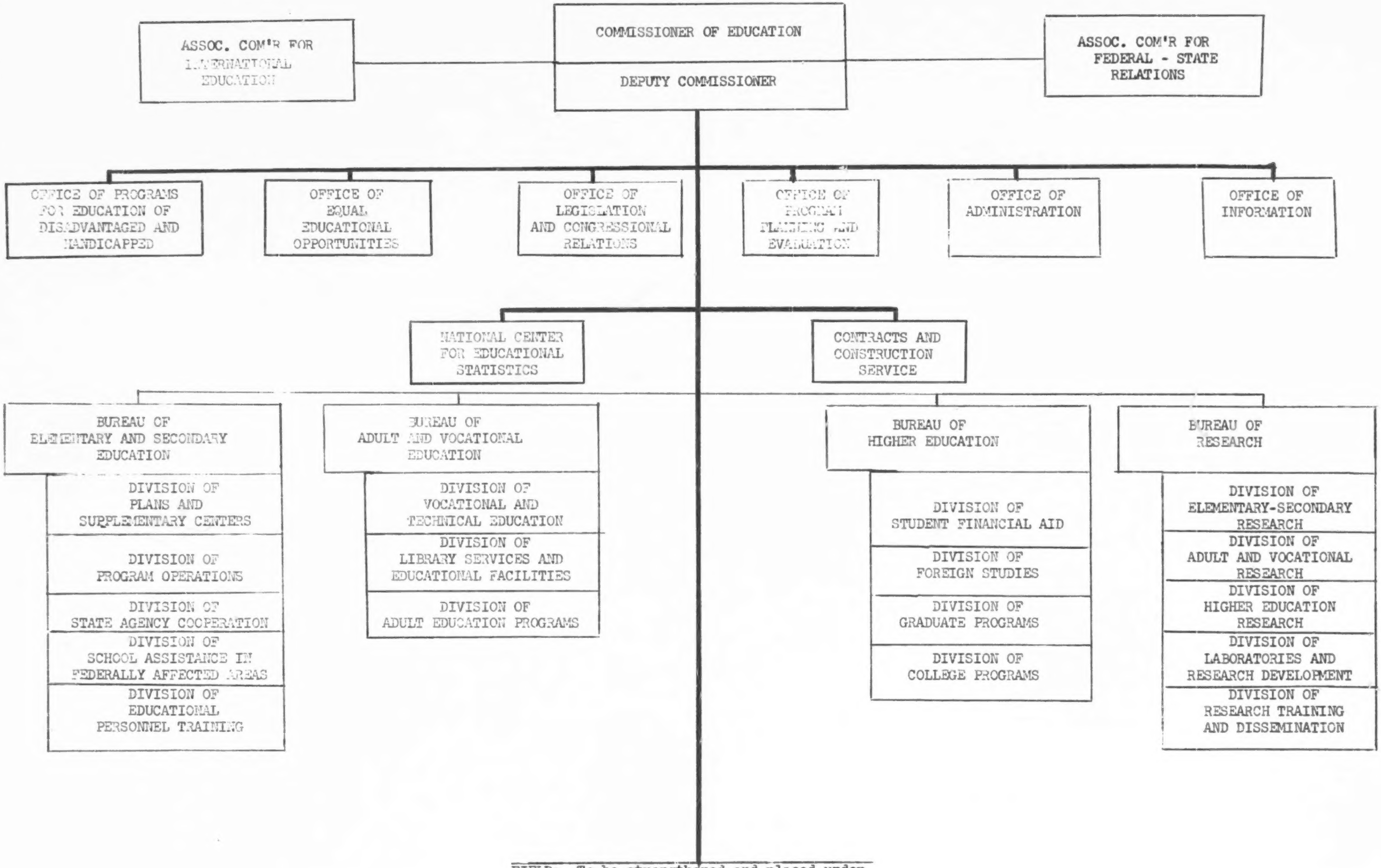
The major reorganization and adjustment involving the vocational and technical education research and development program, and the administration of Section 4(c) of P.L. 88-210, is that we were formerly the Occupational Research and Planning Program (ORP) in the Division of Vocational and Technical Education (DVTE). We are now the Division of Adult and Vocational Research (DAVR) in the new Bureau of Research (BR). The DVTE-ORP structure prior to reorganization is shown in Transparency 4 and the DVTE structure after reorganization in Transparency 5. The present BR-DAVR organizational pattern was indicated in Transparency 3 and additional DAVR organizational and staffing detail is given in Transparency 6.

Specific procedures have been implemented to assure close coordination and communication between DAVR and DVTE. This is essential if research and development and program operation are to render effective service. Joint staff meetings, committees, project and program review are parts of this effort. There are definite advantages to DAVR and the other OE research programs being centralized in the new Bureau of Research. Uniform procedures and a coordinated concentration on research and development priorities in education should result in increased program efficiency. One combined policies and procedures document for the Bureau of Research is being prepared. Until it is distributed, initiators of vocational education proposals should continue to follow OE-4262, "Conditions and Procedures: Grants for Research, Training, Experimental, Developmental, or Pilot Programs in Vocational and Technical Education." All proposals should be sent to the Bureau of Research, U. S. Office of Education, where they will be assigned to the appropriate Division for processing.

U. S. Office of Education

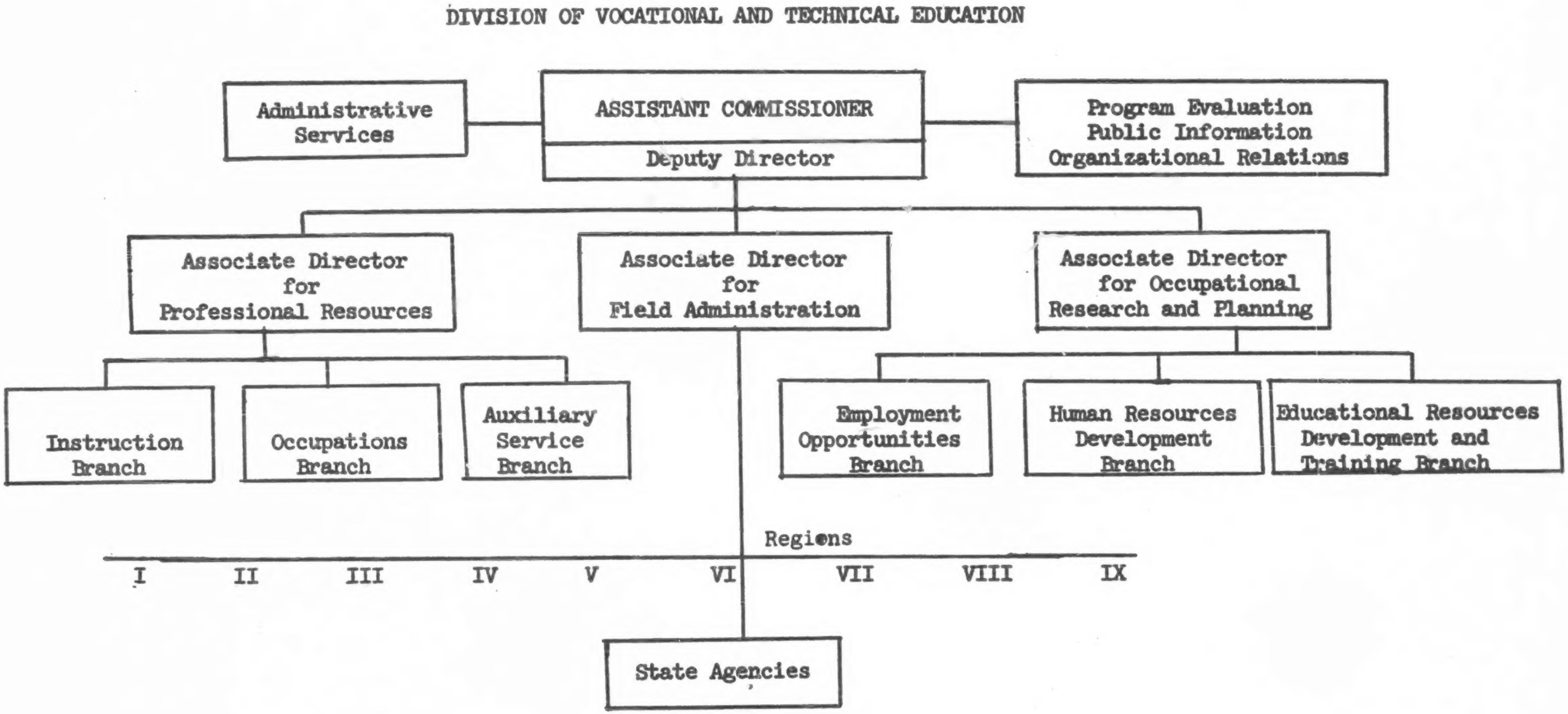

COMMISSIONER
DEPUTY COMMISSIONER
OFFICE OF LEGISLATION
OFFICE OF ADMINISTRATION
OFFICE OF INFORMATION
OFFICE OF FIELD SERVICES
PROGRAMS FOR THE EDUCATION OF THE DISADVANTAGED
OFFICE OF EQUAL EDUCATIONAL OPPORTUNITIES
OFFICE OF FEDERAL EDUCATION ACTIVITIES
BUREAU OF EDUCATIONAL RESEARCH AND DEVELOPMENT
DIVISION OF EDUC. ORG. AND ADMIN.
DIVISION OF EDUCATIONAL RESEARCH
DIVISION OF HANDICAPPED CHILDREN AND YOUTH
DIVISION OF LIBRARY SERVICES
BUREAU OF INTERNATIONAL EDUCATION
DIVISION OF INTERNATIONAL STUDIES & SERVICES
DIVISION OF TECH. ASST. & EXCHANGE PROGRAMS
NATIONAL CENTER FOR EDUCATIONAL STATISTICS
DIVISION OF DATA SOURCES AND STANDARDS
DIVISION OF STATISTICAL SERVICES
DIVISION OF STATISTICAL ANALYSIS
DIVISION OF OPERATIONS ANALYSIS
BUREAU OF EDUCATIONAL ASSISTANCE PROGRAMS
DIVISION OF VOCATIONAL AND TECHNICAL EDUCATION
DIVISION OF SCHOOL ASST. IN FED. AFF. AREAS
DIVISION OF STATE GRANTS
DIVISION OF COLLEGE AND UNIVERSITY ASSISTANCE
BUREAU OF HIGHER EDUCATION
DIVISION OF UNDERGRADUATE ACADEMIC FAC.
DIVISION OF GRADUATE ACADEMIC FAC.
DIVISION OF STUDENT FINANCIAL AID

TRANSPARENCY 1. OE Organizational Structure Prior to July 1, 1965


COMMISSIONER OF EDUCATION
DEPUTY COMMISSIONER
ASSOC. COM'R FOR INTERNATIONAL EDUCATION
ASSOC. COM'R FOR FEDERAL - STATE RELATIONS
OFFICE OF PROGRAMS FOR EDUCATION OF DISADVANTAGED AND HANDICAPPED
OFFICE OF EQUAL EDUCATIONAL OPPORTUNITIES
OFFICE OF LEGISLATION AND CONGRESSIONAL RELATIONS
OFFICE OF PROGRAM PLANNING AND EVALUATION
OFFICE OF ADMINISTRATION
OFFICE OF INFORMATION
NATIONAL CENTER FOR EDUCATIONAL STATISTICS
CONTRACTS AND CONSTRUCTION SERVICE
BUREAU OF ELEMENTARY AND SECONDARY EDUCATION
DIVISION OF PLANS AND SUPPLEMENTARY CENTERS
DIVISION OF PROGRAM OPERATIONS
DIVISION OF STATE AGENCY COOPERATION
DIVISION OF SCHOOL ASSISTANCE IN FEDERALLY AFFECTED AREAS
DIVISION OF EDUCATIONAL PERSONNEL TRAINING
BUREAU OF ADULT AND VOCATIONAL EDUCATION
DIVISION OF VOCATIONAL AND TECHNICAL EDUCATION
DIVISION OF LIBRARY SERVICES AND EDUCATIONAL FACILITIES
DIVISION OF ADULT EDUCATION PROGRAMS
BUREAU OF HIGHER EDUCATION
DIVISION OF STUDENT FINANCIAL AID
DIVISION OF FOREIGN STUDIES
DIVISION OF GRADUATE PROGRAMS
DIVISION OF COLLEGE PROGRAMS
BUREAU OF RESEARCH
DIVISION OF ELEMENTARY-SECONDARY RESEARCH
DIVISION OF ADULT AND VOCATIONAL RESEARCH
DIVISION OF HIGHER EDUCATION RESEARCH
DIVISION OF LABORATORIES AND RESEARCH DEVELOPMENT
DIVISION OF RESEARCH TRAINING AND DISSEMINATION

**FIELD:** To be strengthened and placed under LINE control of chief OE official in each region.

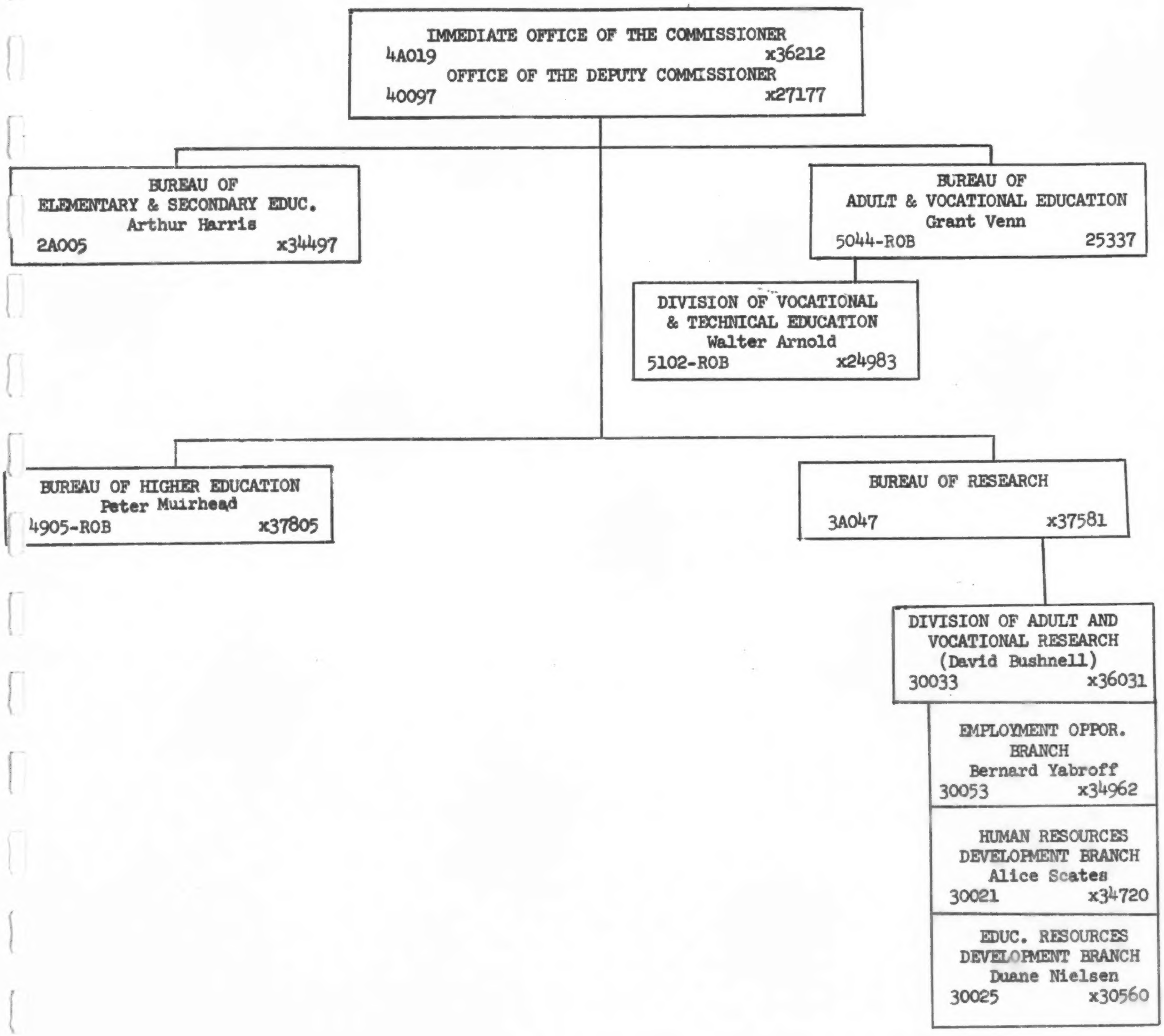
TRANSPARENCY 2. OE Organizational Structure Effective July 1. 1965


DIVISION OF VOCATIONAL AND TECHNICAL EDUCATION
Administrative Services
ASSISTANT COMMISSIONER
Deputy Director
Program Evaluation
Public Information
Organizational Relations
Associate Director for Professional Resources
Associate Director for Field Administration
Associate Director for Occupational Research and Planning
Instruction Branch
Occupations Branch
Auxiliary Service Branch
Employment Opportunities Branch
Human Resources Development Branch
Educational Resources Development and Training Branch
Regions
I
II
III
IV
V
VI
VII
VIII
IX
State Agencies

TRANSPARENCY 4. DVTE Organizational Structure Prior to July 1, 1965

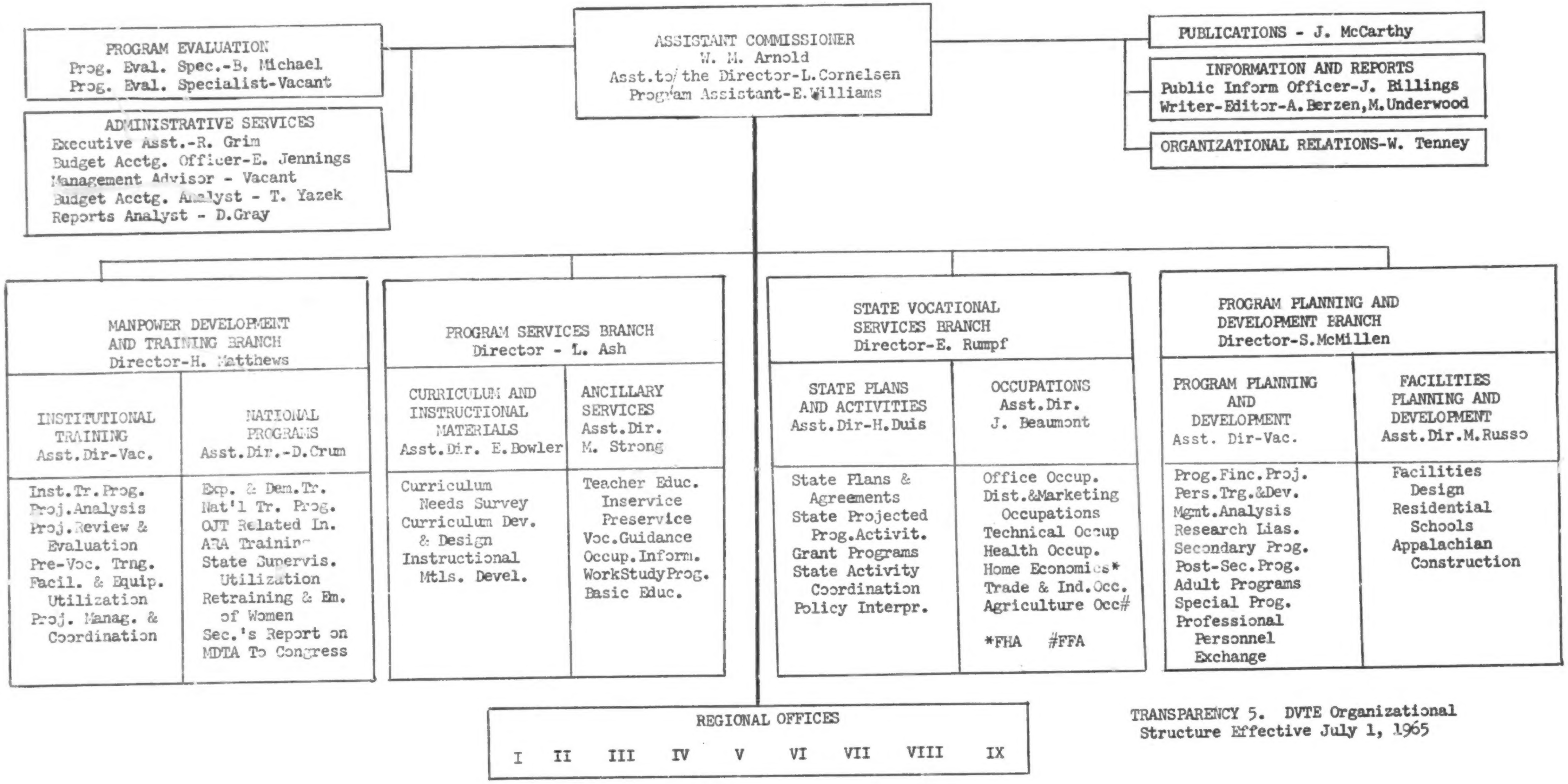
## DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

## OFFICE OF EDUCATION


IMMEDIATE OFFICE OF THE COMMISSIONER
4A019 x36212
OFFICE OF THE DEPUTY COMMISSIONER
40097 x27177
BUREAU OF ELEMENTARY & SECONDARY EDUC.
Arthur Harris
2A005 x34497
BUREAU OF ADULT & VOCATIONAL EDUCATION
Grant Venn
5044-ROB 25337
DIVISION OF VOCATIONAL & TECHNICAL EDUCATION
Walter Arnold
5102-ROB x24983
BUREAU OF HIGHER EDUCATION
Peter Muirhead
4905-ROB x37805
BUREAU OF RESEARCH
3A047 x37581
DIVISION OF ADULT AND VOCATIONAL RESEARCH
(David Bushnell)
30033 x36031
EMPLOYMENT OPPOR. BRANCH
Bernard Yabroff
30053 x34962
HUMAN RESOURCES DEVELOPMENT BRANCH
Alice Scates
30021 x34720
EDUC. RESOURCES DEVELOPMENT BRANCH
Duane Nielsen
30025 x30560

TRANSPARENCY 3. OE Administrative Personnel Assignments
as of July 30, 1965

# DIVISION OF VOCATIONAL AND TECHNICAL EDUCATION



ASSISTANT COMMISSIONER
W. M. Arnold
Asst.to the Director-L.Cornelsen
Program Assistant-E.Williams

PROGRAM EVALUATION
Prog. Eval. Spec.-B. Michael
Prog. Eval. Specialist-Vacant

ADMINISTRATIVE SERVICES
Executive Asst.-R. Grim
Budget Acctg. Officer-E. Jennings
Management Advisor - Vacant
Budget Acctg. Analyst - T. Yazek
Reports Analyst - D.Gray

PUBLICATIONS - J. McCarthy

INFORMATION AND REPORTS
Public Inform Officer-J. Billings
Writer-Editor-A.Berzen,M.Underwood

ORGANIZATIONAL RELATIONS-W. Tenney

MANPOWER DEVELOPMENT AND TRAINING BRANCH
Director-H. Matthews

| INSTITUTIONAL TRAINING<br>Asst.Dir-Vac. | NATIONAL PROGRAMS<br>Asst.Dir.-D.Crum |
|---|---|
| Inst.Tr.Prog.<br>Proj.Analysis<br>Proj.Review & Evaluation<br>Pre-Voc. Trng.<br>Facil. & Equip. Utilization<br>Proj. Manag. & Coordination | Exp. & Dem.Tr.<br>Nat'l Tr. Prog.<br>OJT Related In.<br>ARA Training<br>State Supervis. Utilization<br>Retraining & Em. of Women<br>Sec.'s Report on MDTA To Congress |

PROGRAM SERVICES BRANCH
Director - L. Ash

| CURRICULUM AND INSTRUCTIONAL MATERIALS<br>Asst.Dir. E.Bowler | ANCILLARY SERVICES<br>Asst.Dir.<br>M. Strong |
|---|---|
| Curriculum Needs Survey<br>Curriculum Dev. & Design<br>Instructional Mtls. Devel. | Teacher Educ.<br>Inservice<br>Preservice<br>Voc.Guidance<br>Occup.Inform.<br>WorkStudyProg.<br>Basic Educ. |

STATE VOCATIONAL SERVICES BRANCH
Director-E. Rumpf

| STATE PLANS AND ACTIVITIES<br>Asst.Dir-H.Duis | OCCUPATIONS<br>Asst.Dir.<br>J. Beaumont |
|---|---|
| State Plans & Agreements<br>State Projected Prog.Activit.<br>Grant Programs<br>State Activity Coordination<br>Policy Interpr. | Office Occup.<br>Dist.&Marketing Occupations<br>Technical Occup<br>Health Occup.<br>Home Economics*<br>Trade & Ind.Occ.<br>Agriculture Occ#<br>*FHA #FFA |

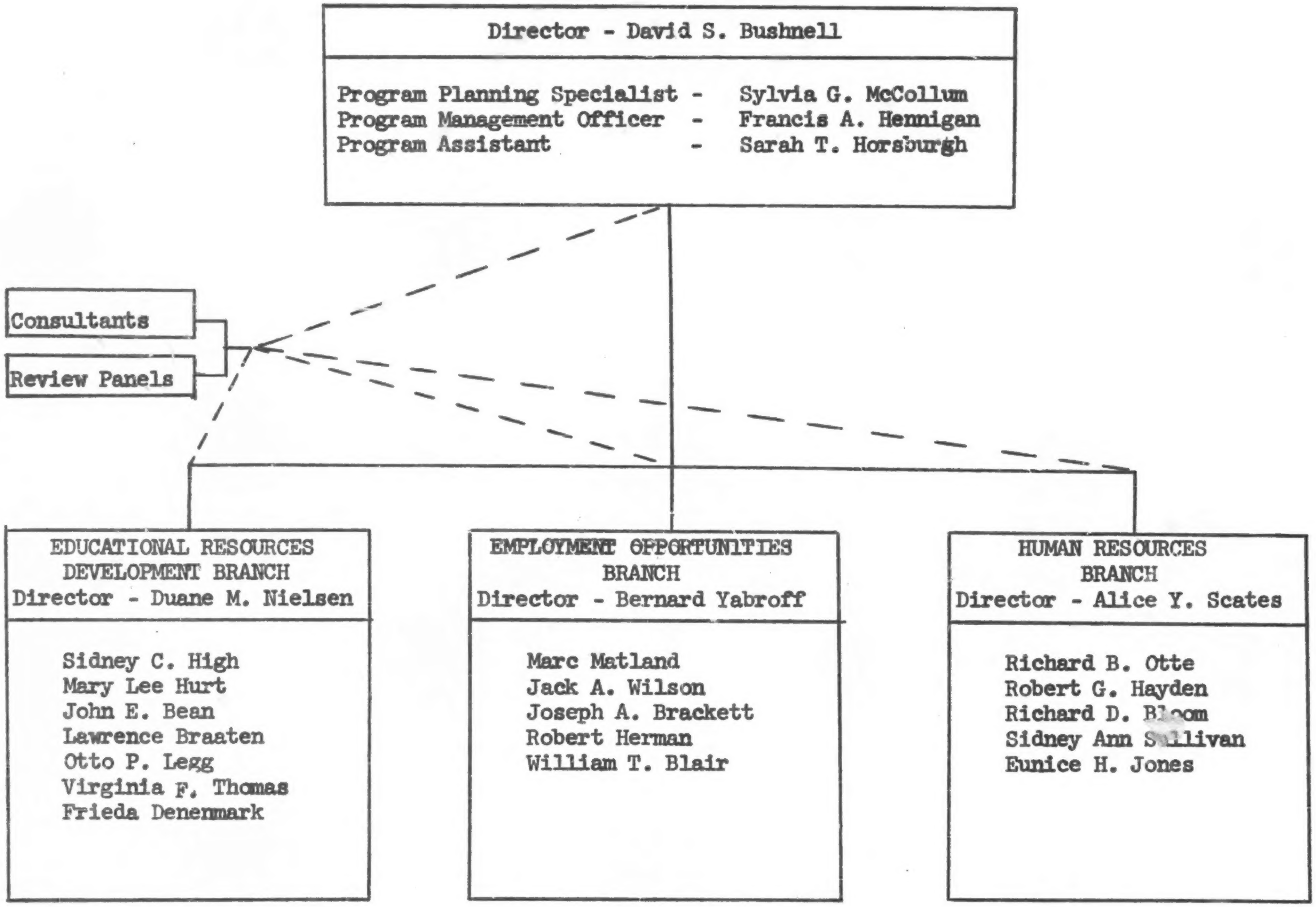
PROGRAM PLANNING AND DEVELOPMENT BRANCH
Director-S.McMillen

| PROGRAM PLANNING AND DEVELOPMENT<br>Asst. Dir-Vac. | FACILITIES PLANNING AND DEVELOPMENT<br>Asst.Dir.M.Russo |
|---|---|
| Prog.Finc.Proj.<br>Pers.Trg.&Dev.<br>Mgmt.Analysis<br>Research Lias.<br>Secondary Prog.<br>Post-Sec.Prog.<br>Adult Programs<br>Special Prog.<br>Professional Personnel Exchange | Facilities Design<br>Residential Schools<br>Appalachian Construction |

REGIONAL OFFICES
I II III IV V VI VII VIII IX

TRANSPARENCY 5. DVTE Organizational Structure Effective July 1, 1965

DIVISION OF ADULT AND VOCATIONAL RESEARCH


Director - David S. Bushnell
Program Planning Specialist - Sylvia G. McCollum
Program Management Officer - Francis A. Hennigan
Program Assistant - Sarah T. Horsburgh
Consultants
Review Panels
EDUCATIONAL RESOURCES DEVELOPMENT BRANCH
Director - Duane M. Nielsen
Sidney C. High
Mary Lee Hurt
John E. Bean
Lawrence Braaten
Otto P. Legg
Virginia F. Thomas
Frieda Denenmark
EMPLOYMENT OPPORTUNITIES BRANCH
Director - Bernard Yabroff
Marc Matland
Jack A. Wilson
Joseph A. Brackett
Robert Herman
William T. Blair
HUMAN RESOURCES BRANCH
Director - Alice Y. Scates
Richard B. Otte
Robert G. Hayden
Richard D. Bloom
Sidney Ann Sullivan
Eunice H. Jones

TRANSPARENCY 6. DAVR Organizational Structure Effective July 1, 1965

## FY 1965

On June 30, 1965, the Occupational Research and Planning Program (DAVR since July 1) completed its first year of activity. Although the program had been in operation slightly less than nine months the response was impressive. In summary:

- 475 proposals were received, almost double our January 1965 estimate. Assuming that each proposal represents five man days of effort by those in the research community on vocational problems, the program generated 2,400 man days of effort at no expense to the Government.
- 146 proposals or 31 percent of the total received were approved by the Commissioner and all will become firm contracts within the next few weeks.
- The total appropriation of $11.85 million for fiscal year 1965 was expended.

The distributions of projects approved during fiscal 1965 are shown in the next four transparencies. A brief examination of these distributions provides an overview of the scope and diversity of program activity. Transparency 7 indicates the distribution of approved projects by areas of major impact.

## TRANSPARENCY 7. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY AREAS OF MAJOR IMPORT, FY 1965 (N-146)

| | | |
|---|---|---|
| Job Analysis | 6 | 4% |
| Testing and Evaluation | 6 | 4% |
| Curriculum | 13 | 9% |
| School Organization, Administration, and Special Programs | 7 | 5% |
| Methods, Material, Media | 7 | 5% |
| Teacher Education and Training | 22 | 16% |
| Individual and Social Characteristics | 14 | 10% |
| Career Choice | 5 | 3% |
| Guidance and Counseling | 8 | 5% |
| Special Groups (Drop-outs, Adults, Disadvantaged, and Slow Learners) | 19 | 13% |
| Research and Development Planning and Administration | 39 | 26% |

Classification of the projects into areas of major impact yielded a 16 percent distribution of approved projects for teacher education and training, 13 percent for immediate vocational needs of dropouts, adults, disadvantaged and slow learners; 26 percent for the training and support of research personnel, and the rest scattered among the other eight classifications. The latter area includes two vocational research centers, 23 State Vocational Research Coordinating Units, and several small projects aimed at improving research management. A high multiplier effect from these projects is expected and reflects a sound first-year investment in program growth potential. There is a reasonably good distribution of projects covering topics stressed during FY '65, e.g. identification of emerging job opportunities, optimum location of vocational schools, evaluation of teacher certification requirements, in-service training for vocational teachers, and the improvement and expansion of State vocational education planning organizational and administrative capabilities. We are also supporting or participating in a number of projects concerned with exploiting new information handling techniques through computer-assisted instruction, and electronic data processing of information on the statistics of the vocational system and on research activities completed or in process. Application of systems analysis and operation research techniques to major vocational problems is also being attempted.

The distributions of Branch program area, submitting institutions and type of project are given in Transparency 8.

TRANSPARENCY 8. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY BRANCH PROGRAM AREAS, INSTITUTIONS AND TYPES, FY 1965.

| PROGRAM AREAS (N=146) | | | INSTITUTIONS (N=146) | | | | TYPES (N=146) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EO | HRD | ERD | Colleges & Universities | State Education Departments | Local Education Agencies | Private Organizations | Res. | E-D-P | Tng. | C | RCU |
| 13 | 36 | 97 | 105 | 24 | 7 | 10 | 46 | 42 | 33 | 2 | 23 |
| 9% | 24% | 67% | 72% | 16% | 5% | 7% | 32% | 29% | 22% | 1% | 16% |

PROGRAMS

EO - Employment Opportunities
HRD - Human Resources Development
ERD - Educational Resources Development

TYPES

| | |
|---|---|
| Res. | Research |
| E-D-P | Experimental, Developmental, and Pilot |
| Tng. | Training |
| C | Centers |
| RCU | Research Coordinating Units |

The distribution by Branch program areas shows 67 percent of the projects falling under Educational Resources and Development, 24 percent under Human Resources Development, and 9 percent under Employment Opportunities. The high percentage in Educational Resources is consistent with the relatively heavy emphasis noted above on training programs and on demonstration projects.

The problem of attracting competent behavioral scientists to work on vocational aspects of human resources development, and competent economists to undertake occupational research projects has delayed the response in these two program areas. The situation is improving, but for the next few years we will be in competition with other research and development programs for behavioral and social science research talent.

A substantial number of approved projects - 72 percent - went to colleges and universities. These statistics can be misleading, however, because many university projects were undertaken on behalf of State and local school systems.

A better balance was achieved in the distribution of types of projects. Thirty-two percent was for research; 29 percent for experimental, developmental and pilot programs; 22 percent for training; and 17 percent for research centers and State Coordinating Units. The relatively large proportion of experimental and training projects should yield early and visible results and thereby make immediate contributions to an improved vocational system.

The geographical distribution shown in Transparency 9 reflects a concentration of projects in California, Illinois, Michigan, New York, and Pennsylvania, with 57 percent of the total number in these five States. Only 13 States show no approved projects.

## TRANSPARENCY 9. DISTRIBUTION OF APPROVED VOCATIONAL RESEARCH AND DEVELOPMENT PROJECTS BY STATES, FY 1965. (N=146)

| | |
|---|---|
| Alabama | 0 |
| Alaska | 0 |
| Arizona | 1 |
| Arkansas | 2 |
| California | 16 |
| Colorado | 5 |
| Connecticut | 2 |
| Delaware | 1 |
| District of Columbia | 4 |
| Florida | 7 |
| Georgia | 2 |
| Hawaii | 0 |
| Idaho | 2 |
| Illinois | 11 |
| Indiana | 0 |
| Iowa | 4 |
| Kansas | 1 |
| Kentucky | 3 |
| Louisiana | 1 |
| Maine | 0 |
| Maryland | 3 |
| Massachusetts | 5 |
| Michigan | 9 |
| Minnesota | 3 |
| Mississippi | 1 |
| Missouri | 2 |
| Montana | 1 |
| Nebraska | 2 |
| Nevada | 0 |
| New Hampshire | 0 |
| New Jersey | 3 |
| New Mexico | 1 |
| New York | 12 |
| North Carolina | 2 |
| North Dakota | 1 |
| Ohio | 5 |
| Oklahoma | 7 |
| Oregon | 4 |
| Pennsylvania | 9 |
| Rhode Island | 1 |
| South Carolina | 1 |
| South Dakota | 0 |
| Tennessee | 0 |
| Texas | 3 |
| Utah | 1 |
| Vermont | 0 |
| Virginia | 0 |
| Washington | 2 |
| West Virginia | 0 |
| Wisconsin | 6 |
| Wyoming | 0 |

Transparency 10 lists the projects approved during FY 1965 which have relevancy to agricultural education. Those received and awaiting review action are listed in Transparency 11. Although several of these projects have more than one investigator, only the name of the principal initiator is listed. In addition, portions of the programs at the two approved centers, Ohio State University and North Carolina State University, will relate to agricultural education. Also, the five major research and development units and 23 research coordinating units will conduct activities relevant to agricultural education.

## TRANSPARENCY 10. APPROVED PROJECTS RELATED TO AGRICULTURAL EDUCATION, FY 1965

| Proposal No. & Branch | Initiator and Agency | Title |
|---|---|---|
| 001<br>ERD | Dr. John K. Coster<br>Professor and Director of Research<br>Department of Agricultural Education<br>University of Nebraska<br>Lincoln, Nebraska | An Experimental Evaluation of Approaches to Preparing High School Students for Agricultural Occupations Other than Farming |
| 002<br>ERD | Dr. Robert E. Taylor<br>Director<br>Center for Research and Leadership Development in Vocational and Technical Education<br>The Ohio State University<br>Columbus, Ohio | A Determination of Needed Adjustments and Extensions in the Curricular Patterns of Vocational Education in Agriculture |
| 038<br>EO | Dr. Roy D. Dillon<br>Associate Professor and Chairman<br>Agricultural Education<br>Morehead State College<br>Morehead, Kentucky | Employment Opportunities and Agricultural Competencies Needed by Workers in Present and Emerging Non-Farm Agricultural Occupations in Selected Counties in the Appalachian Region |
| 049<br>ERD | Dr. Harold R. Binkley<br>Chairman<br>Division of Vocational Education<br>University of Kentucky<br>Lexington, Kentucky | Demonstration Center at Reidland High School for Training Farm Youth in Non-Farm Agricultural Occupations |
| 067<br>ERD | Dr. Gene M. Love<br>Associate Professor<br>Department of Agricultural Education<br>The Pennsylvania State University<br>University Park, Pennsylvania | Development and Evaluation of Instructional Units in Ornamental Nursery, Floriculture, and Turf Occupations for High School Students and Adults in Northeastern United States |

TRANSPARENCY 11. PROPOSALS RELATED TO AGRICULTURAL EDUCATION AWAITING REVIEW ACTION, AUGUST 1, 1965

| Proposal No. & Branch | Initiator and Agency | Title |
|---|---|---|
| 427<br>EO | Mr. Edgar Persons<br>Department of Agricultural Education<br>College of Education<br>University of Minnesota | A Micro-Economic Study of the Investment Effects of Education in Agriculture |
| 449<br>ERD | Mr. Dale C. Abebisher<br>Chief, Agricultural Education<br>State Board of Vocational and Adult Education<br>Madison, Wisconsin | Development of Curricula, Course Outlines and Instructional Materials for Programs of Vocational Education for High School Students in Agriculture |
| 451<br>ERD | Mr. R. A. McKinney<br>Director, Agricultural Education<br>State Department of Public Instruction<br>Indianapolis, Indiana | Development of Curricula, Course Outlines and Instructional Materials for Programs of Vocational Education for High School Students in Agriculture |
| 460<br>ERD | Dr. Lloyd J. Phipps<br>Professor of Vocational and Technical Education<br>University of Illinois | A Study in Communication Between High School Teachers of Vocational Agriculture and Socio-Economically Disadvantaged youth by the use of Semantic Differential |
| 461<br>ERD | Mr. A. O. Duncan<br>Department of Agricultural Education<br>University of Georgia | The Development of a Teacher's Guide on Keeping and Analyzing Supervised Farming Records in Vocational Education in Agriculture |

| Proposal No. & Branch | Initiator and Agency | Title |
|---|---|---|
| 075<br>ERD | Mr. Glen Teeter<br>Vocational Agriculture Instructor<br>Magnet Cove High School<br>Malvern, Arkansas | Evaluation of the Effectiveness of Using Specialized Instructors in Providing Occupational Training for Industrial Jobs for High School Vocational Agricultural Students |
| 105<br>EO | Dr. C. L. Mondart<br>Director<br>School of Vocational Education<br>Louisiana State University<br>Baton Rouge, Louisiana | The Development of Training Programs for Youth Preparing to Enter Non-Farm Agricultural Jobs |
| 108<br>HR | Dr. Lloyd J. Phipps<br>Professor and Chairman<br>Agricultural Education<br>University of Illinois<br>Urbana, Illinois | Development of Human Resources of Youth Through a Vocationally Oriented Educational Program for Disadvantaged Families in Depressed Rural Areas |
| 201<br>ERD | Dr. B. Klare Sommers<br>Dean of Faculty<br>Agriculture and Technical College<br>Delhi, New York | A New Program of National Significance to Train Students as Animal Science Technologists |
| 202<br>ERD | Dr. Everett D. Edington<br>Professor<br>Department of Agricultural Education<br>Oklahoma State University<br>Stillwater, Oklahoma | Training Institute to Upgrade Teachers of Vocational Agriculture in Distributive Education and Supervised Training Off-Farm Agricultural Occupations |
| 205<br>ERD | Dr. Ray J. Agan<br>Chairman<br>Department of Agricultural Education<br>Kansas State University<br>Manhattan, Kansas | The Development and Demonstration of a Coordinated and Integrated Program of Occupational Information, Selection and Preparation in a Secondary School |

| Proposal<br>No. & Branch | Initiator and Agency | Title |
|---|---|---|
| 239<br>EO | Mr. James J. Albracht<br>College of Education<br>Michigan State University<br>East Lansing, Michigan | Determining Vocational Competencies for Performance of Essential Activities for Sales Personnel in the Feed Industry, and the Loci at Which the Competencies Could be Taught |
| 369<br>ERD | Dr. Harold R. Cushman<br>Professor<br>Department of Agricultural Education<br>Cornell University<br>Ithaca, New York | The Development and Improvement of Directed Work Experience Programs in Expanded Vocational Education Offerings in Agriculture at the Secondary School Level |
| 389<br>HR | Dr. D. R. Bentley<br>Department of Agricultural Education<br>Purdue University<br>Lafayette, Indiana | Changing Teacher Morale; An Experiment in Feedback of Identified Problems to teachers and Principles |

Overall, the statistics indicate program activity at a much higher level than we expected. Where imbalances existed, adjustments have been sought through active solicitation and sponsorship of needed studies. We expect to do more of this as our professional staff expands.

Behind the proposal and project statistics lie a number of accomplishments and problems which provide a different perspective of the program.

The Conditions and Procedures and the Federal Regulations governing the submission and handling of proposals and the administration of contracts were first issued in November 1964. Over 15,000 copies have been distributed throughout the educational and research communities. In March, supplementary Conditions and Procedures were issued for submitting proposals on vocational research centers, and in April for proposals on State research coordinating units.

A Preliminary Statement of Guidelines for the Occupational Research and Planning Program was issued simultaneously with the Conditions and Procedures. This statement of program objectives and research priorities reinforced the more legalistic program documents and enabled us to announce our presence and state our program interests to the public. More than 15,000 copies have been distributed.

Two interim research review panels of outside consultants were established, one dealing with proposals in both the Employment Opportunities and Human Resources areas, and the other with Educational Resources proposals. Arrangements are now underway to expand to three permanent panels as authorized by the Secretary of Health, Education, and Welfare. These panels are essential components of the Office of Education's research proposal review machinery and have been helpful in shaping the total program. Their members contribute their professional advice not only on individual proposals but also on program plans and procedures. They have been most helpful and unsparing in offering their time and effort. An additional benefit from their participation has been wider program visibility among professional educators and research scientists. Full panel meetings were held in November, January, and March. Special _ad hoc_ panel meetings were convened in May to review Research and Developmen Center and State Research Coordinating Unit proposals. In all, 230 proposals were reviewed by these outside panelists between November and May.

In March, the Commissioner approved a special staff review system for training and conference proposals under $50,000, and for research, experimental, developmental and pilot (small grants) proposals under $7,500. Seventeen staff review panels were convened between March 15 and June 30 to review 115 proposals.

A favorable legal opinion was obtained on the payment of subsistence allowances, travel, per diem, and tuition and related fees for professional persons participating in training programs. This kind of support is critical to the success of teacher and researcher training programs. The favorable ruling permitted funding action on more than 30 summer conference and institute proposals and should stimulate a large number of similar proposals in the future. We estimate that about 1,000 teachers will be trained through these 1965 summer projects.

An interdisciplinary staff has been recruited. Of the professional research positions available, 22 had been filled by June 30. The remaining seven vacancies should be filled by August 31. The professional distribution of the staff includes social and behavioral scientists, economists, general educators, and vocational educators.

Among its varied activities, the staff had major roles in developing and planning a summer inservice training program at the University of Maryland for Division and State professional personnel. This program, stressing both vocational education and social science topics, has proved helpful in orienting new personnel.

The large number of staff vacancies during the early months was, and remains, a severe handicap. At times, it has been difficult to balance the large influx of proposals and requests for assistance resulting from these contacts against the production demands of the proposal review and processing system. Fortunately, we had considerable assistance from other OE offices, and the large measure of procedural latitude usually granted new programs permitted us to take some helpful shortcuts. With a full staff complement in fiscal year 1966 we hope to speed up our review and processing procedures.

Research program planning and development received high priority during this first year of activity. The major conferences and seminars sponsored were:

1. A November conference of leading vocational researchers;
2. A March conference of trade association executives;
3. A May conference at MIT of key representatives of the education, research, business, and governmental communities, to plan a major study of possible innovations in vocational curriculum;
4. A June conference at the University of Wisconsin, of leading economists to gauge the economic data needs of the vocational program;

5. A summer conference at Michigan State University for AFL-CIO union representatives from each of the 52 States; and

6. Four seminars for vocational and technical education researchers.

Every available opportunity has been followed up to initiate meetings with other Federal agencies, professional societies, foundations, and business organizations having an actual or potential role in vocational research. At the annual conventions of the American Vocational Association, the American Educational Research Association, and the American Psychological Association, the new program was presented to large and receptive audiences. Presentations were also made at nine regional conferences, conducted in January and February by the Division of Vocational and Technical Education for State Directors of Vocational Education and their staffs.

Modest efforts were made in the dissemination of research results. Lines of communication have been established with State Directors of Vocational Education and State Department of Education Research staffs through the distribution of periodical listings and abstracts of proposals received and funded. Arrangements have also been made to furnish information regularly to research journals and newsletters. Directors of Centers and State Research Coordinating Units will become an integral part of this dissemination and communication function.

Hopefully, the recent reorganization of the Office of Education should help us to improve this vital function. Within the new Bureau of Research will be a Division of Research Dissemination and Training. It will, among other things, make available an Electronic Data Processing System for the storage, retrieval, and dissemination of research information.

Closely related to stimulation and dissemination efforts is the provision of consultative services to prospective sponsors of proposals. These services range from expressing an opinion on the relative merits of a budding concept to lengthy and involved meetings and exchanges of correspondence on the actual development and drafting of a formal proposal. These services provide a rich area for both teaching and receiving instruction on research and development design and methods; they probably provide the most severe tests of the professional skills and attitudes of the program research staff. We have not been able, of course, to accommodate all requests. In recognition of this problem, we have indirectly expanded our consultative capabilities by funding the two vocational research centers and 23 State Research Coordinating Units. In addition, the series of intensive seminars was conducted at four major universities for vocational researchers on research objectives and proposal preparation procedures and methods. We intend to expand support for this type of activity.

The earlier mentioned preponderance of university sponsors of projects in fiscal year 1965 emphasizes the need to improve the research capabilities of State and local educational agencies. Most of the efforts discussed above point in this direction. The lack of response on the part of State and local school districts is often not so much a shortage of available research talent as a need for training professionally qualified persons in the mechanics of preparing proposals. The creation of the new Bureau of Research gives the Office of Education an excellent opportunity to revamp and simplify its research application and funding procedures, and the Division of Adult and Vocational Research expects to play a strong role in this process.

Considerable effort has been made to develop and maintain close relationships with other Government agencies. An immediate concern is with working out effective operating relationships between the Division of Vocational and Technical Education and the Division of Adult and Vocational Research, and with the four other Divisions in the new Bureau of Research: Division of Research Training and Dissemination; Division of Elementary and Secondary Research; Division of Higher Education Research; and Division of Laboratories and Research Development.

We have, of course, considerable experience in working with the Division of Vocational and Technical Education, and the legislative mandate in the 1963 Act enables us to concentrate on providing research and development support to its programs. The disadvantages of organizational separation between the research and operating programs should be offset by the ability of the Division of Adult and Vocational Research to focus all applicable program resources of the Bureau of Research on the needs of the vocational system. For example, the Division of Research Training and Dissemination and the Division of Laboratories and Research Development offer new and promising support potential.

We are also engaged in efforts to define the vocational implications of the research provisions of the 1965 Elementary and Secondary Education Act, and have been active in developing methods of funding comprehensive projects from the resources of several other statutory programs.

In improving our coordination with other Federal agencies, we have concentrated principally with the Office of Manpower, Automation and Training of the Labor Department, and the Office of Economic Opportunity. With OMAT we have developed a good division of labor on complementary research and development areas of emphasis. Although the programs of the Office of Economic Opportunity are still being defined, we have had some success in working out joint support arrangements for vocationally oriented projects involving both that agency and the Office of Education. During the next fiscal year we plan to strengthen program contacts with the Departments of Agriculture and Commerce, and with agencies such as Defense and NASA which also make major investments in manpower research and training.

Seven areas of special emphasis have been selected by DAVR for priority attention during the coming year. Listed in the order of their priority, they are:

1. Program Evaluation
2. Curriculum Development and Experimentation
3. Personal and Social Significance of Work
4. Personnel Recruitment and Development
5. Program Organization and Administration
6. Adult and Continuing Education
7. Occupational Information and Career Choice

I will discuss these priority areas in terms of their application to vocational and technical education in general, however, the implications for agricultural education are obvious.

## 1. Program Evaluation

The Vocational Education Act of 1963 requires that a report evaluating Federally supported programs in vocational education be presented to the President and the Congress not later than January 1, 1968. Research projects designed to contribute to this evaluation have a high priority since they must necessarily be completed well in advance of the January 1, 1968, date. Research will be directed to the following specific problem areas:

(1) Determining the effectiveness of new vocational education programs supported by Federal funds under the 1965 Act with reference to career patterns, employment records, and incomes of graduates and non-graduates; the amounts and kinds of vocational and on-the-job training considered necessary by employers; high school dropout rates; and other measurable factors relating to the success or lack of success of participants in such programs. Particular attention will be focused on the intergovernmental fiscal relations aspect of vocational education; e.g., the extent to which matching funds for new programs represent new resources devoted to vocational education.

(2) Comparative studies of alternative methods of preparing individuals for work and economic evaluation of training programs in particular occupational fields. Studies which seek to determine the relative effectiveness and relative costs of the many ways young people are prepared for work and the ways in which experienced workers acquire additional training will be actively pursued.

(3) The impact of vocational education on job changes (among areas, occupations, and industries) and other aspects of economic resources mobility will be carefully considered.

## 2. Curriculum Development and Experimentation

The basic objective of this area of concentration has been to stimulate a critical examination of present educational practices in vocational and adult education, particularly those that relate to the teaching of disadvantaged youth and to encourage and support research and development projects in curriculum and teaching of new and emerging occupational skills. Among the highest priority items in vocational education is the need to identify the knowledge and skills required to qualify for a cluster of rapidly developing occupational opportunities. The establishment of new configurations of vocational programs which will concentrate on groupings of related occupations, such as the health services or agriculture services occupations, will be explored.

The best developed instructional resources, media, and facilities will be applied in the development of these new skills. Recent innovations in simulation training and computer based instruction, particularly those pioneered by NASA and the Armed Forces, will be explored for their relevance to vocational education. Experiences gained at the Job Corps Centers and MDTA programs will be evaluated and emulated where applicable.

The Division will be interested in curriculum proposals which examine, experiment with, and offer well articulated programs at various grade levels below that of professional, including the specification of teaching methods, and materials in the following occupational fields:

(1) Health services occupations
(2) Engineering-technician occupations
(3) Recreational occupations
(4) Ornamental horticulture and agricultural services occupations
(5) Building maintenance
(6) Public service occupations
(7) Social welfare occupations
(8) Office occupations

In addition, studies which evaluate these and other curriculum offerings and curriculum materials are desired. The principal purpose will be to identify the relative effectiveness of different methods of teaching and the best combination of practices and materials in preparing people for newly emerging job opportunities.

Research and experimentation will also be focused on new administrative structures and organizational patterns for establishing and carrying out new occupational training and adult education programs. This should include consideration of new and improved methods of teacher utilization and the application of educational technology to the needs of adult and vocational education.

## 3. Personal and Social Significance of Work

The concept of work as a major factor in adult life is central in our society. From his work the individual derives not only his income but also many of his personal satisfactions and his status in the social groups with which he has contact. In order to prepare him for his role as an employed adult and to help him continue to grow both as an individual and as a member of society, it is necessary for us to increase our understanding of how a person forms his concepts of work. We need to know more about the kinds of things which motivate him in various work-related situations and the ways in which he derives his satisfaction from them. Knowledge about a person's aspirations and their relationship to his abilities are vital in providing counseling and guidance. The place of different kinds of work in the individual's value structure and also in the value structure of various social groups is of major importance in his choice of an occupation. The interaction of his work and his self-concept throughout the various life-stages of adolescence through maturity must be considered in preparing the person for work entry as well as continuing education and training.

Understanding the worker as an individual and as a member of society is crucial in planning his education and evaluating his performance. Research in terms of the non-college bound will be encouraged in all of the areas mentioned above, and development projects which utilize such knowledge for purposes of counseling or designing better educational programs will be considered.

### 4. Personnel Recruitment and Development

Accelerated technological change, space research and development, a rapid expansion of the service industries, and an expanded vocational education program at the secondary and post-secondary levels has increased the demand for vocational teachers. New area vocational schools are being built. Many high schools and community colleges are adding vocational courses. To keep pace, it is imperative that high priority be accorded to the recruitment and development of competent vocational and adult education personnel; thus the goal of this fourth area is to assist in the development of an adequate supply of the types of personnel needed to staff new programs of vocational and adult education and to develop procedures to permit the upgrading of present personnel.

Studies are needed which relate to the determination of the numbers, qualifications, and sources of people needed to meet the staffing requirements of current and projected adult and vocational programs.

Research is needed to determine what vocational teachers should be taught and how teacher preparation programs should be organized at our Nation's colleges and universities.

The development of experimental programs for training new and current personnel are required. This should include the training not only of vocational teachers and counselors but also of school administrators and related vocational-technical-adult educational personnel. Funds are available to conduct summer and other institutes for teachers for new and emerging occupations or to upgrade the competencies of teachers presently engaged in adult and vocational programs.

### 5. Program Organization and Administration

A number of investigations should be directed to the improvement of existing organizational structures of vocational education at State and local levels. The identification of factors which influence change, such as attitudes of State boards for vocational education; use of advisory groups; involvement of appropriate groups in the formulation of State plans, of matching funds, and other patterns of organization which facilitate rapid adaptation of program activities is urgently needed.

Successful local, State, and regional programs and their related organizational structures need to be identified and communicated elsewhere. Organizational and administrative patterns of vocational education programs already in existence need evaluation. Those that are successful need recognition and communication to other practitioners. Recent trends in general education, such as ungraded schools, team teaching, flexible scheduling, and individualized instruction need to be adapted to the purposes of vocational education.

### 6. Adult and Continuing Education

The increased emphasis on adult and continuing education is reflected in a substantial number of Federal programs, such as the Manpower Development and Training Act and the Economic Opportunity Act. This rapidly growing field requires definition and improved institutional patterns. Many previous attempts at planning have failed because of the lack of knowledge about the number and kinds of adults presently engaged in educational activities and of the number and kinds of courses and programs available to them. It is not possible to build a sound plan without a more accurate picture of the size and scope of the current enterprise.

Emphasis will be given first to determining the extent of participation in adult and continuing education activities. This undertaking will probably be in the nature of a census which will provide more reliable data on the numbers of adults participating in specific kinds of educational activities.

A second undertaking of equal importance is the assessment of the kinds of courses and programs for adults currently available in this country. Substantial programs in adult education are carried on by such diverse agencies and organizations as departments of the Federal government, colleges and universities, junior and community colleges, proprietary schools, industrial firms, labor unions, public school systems, libraries and museums, and voluntary organizations of various kinds. It is necessary to understand the nature and scope of these offerings before attempting the design of future large-scale programs for adults.

Research is also needed on the problem of what motivates adults to continue learning and how they learn. It seems clear that both the motives of adults in seeking to learn and the process itself is different from what happens with children and adolescents, but definitive knowledge is lacking.

Emphasis will be placed on the development and evaluation of:

(1) The methods of recruiting and training teachers and leaders for adult and continuing activities;

(2) Ways in which adult education organizations and agencies can be coordinated in bringing their resources to bear on areas in which there is critical need for social action;

(3) Definition of the needs of older persons for broadening their education or learning new work skills;

(4) Educational programs for semiliterate adults to enable them to live more successfully in an urban environment; and

(5) Patterns of organizing and administering new institutions or agencies designed specifically for the education of adults.

## 7. Occupational Information and Career Choice

One of the severest handicaps to vocational and technical education has been the dearth of relevant occupational data and methods for effective communication of such information. Lack of knowledge about the ways in which career decisions are shaped has all too often led to the selection and preparation of youngsters for inappropriate careers, particularly those who can least afford to make wrong commitments.

Occupational information needs will be met through a variety of studies. For example, new and growing occupational fields will be surveyed to identify skill competencies and training requirements, and to determine future employment needs. Occupational classification systems will be analyzed for possible improvement. The costs of vocational education which are borne by students - such as tuition, transportation, and earnings given up to attend school - will be weighed against the returns to the individual in personal income, job satisfaction, and other benefits.

Projects which relate to improved methods of packaging and disseminating occupational opportunity information will also be sought in order to meet the needs of specific audiences, such as the high school dropout, the slow learner, disadvantaged youngsters, parents, hard core unemployed, etc.

Studies of the process of recruiting and selecting counselors and the entire process of vocational guidance and career choice are also important. We need to expand counseling practices which provide occupational information to the non-college bound student. We need to assess counselor competencies and to develop methods for their upgrading.

A limited number of additional projects which do not fall in one of these seven priority areas may be funded if conditions warrant support of such programs.

May I repeat again that it is a pleasure for me to participate in this seminar. We have a challenging opportunity before us. I feel confident that our experiences here will contribute greatly to our ability to more adequately serve vocational and technical education.

# DEVELOPING PROPOSALS FOR FUNDING RESEARCH AND DEVELOPMENT PROJECTS

by John K. Coster
Professor of Agricultural Education
and Educational Administration
University of Nebraska

In enacting the historic legislation, Public Law 88-210, the Congress of the United States clearly enunciated the position that the research and development activities and efforts related to vocational and technical education are to be elevated to full partnership with instructional, supervisory, and teacher education activities. Not only is the U.S. Commissioner of Education required to withhold 10 percent of all monies appropriated under the authorizations of the Vocational Education Act of 1963 for support of research and development programs, for which applications are made to the Commissioner of Education, but, fully as important, State Boards of Education are required to use 3 percent or more of all funds allocated to their respective States for ancillary services, which may include state supported research and development programs.

The impact of the Act of Congress to provide for and stimulate research and development activities, and the translation of this provision into operational machinery for the stimulation and administration of research and development programs at the National level, within the Office of Education, originally in the Occupational Research and Planning Program of the Division of Vocational and Technical Education, and more recently, following the reorganization of the U.S. Office of Education, within the Division of Adult and Vocational Research within the Bureau of Research, has stimulated one of the most exciting eras in the history of vocational and technical education. The idea is the thing, and the staff of the Division of Adult and Vocational Research, a staff of dedicated, competent, well-trained, and hard working professional educators, has set into motion the plans and operation for searching out and putting into operational form ideas which may be translated into proposals, and the proposals translated into plans of development, research and training, which, when completed, may be expected to improve the quality of future programs of vocational and technical education and occupational preparation and retraining.

Policies and procedures have been set up so that any person interested in vocational and technical education or in supporting disciplines which may relate and contribute to vocational and technical education may participate in research and development activities, and may apply for Federal support. Applicants for Federal support include persons or agencies representing local school corporations, state departments of education, universities and colleges, and not-for-profit educational agencies and foundations. Underlying the entire program, I believe, is the tacit assumption that no one person or type of person, or that no one agency or type of agency has a monopoly on ideas, and that there should be a clear-cut set of policies and procedures developed which will encourage the ideas in proposal forms for support as research and development projects.

At the outset it should be pointed out and emphasized that the proposals which will be recommended for financial support from funds authorized under Section 4(c) of the Vocational Education Act of 1963 will be the proposals which will, in the judgment of members of the review panels and the U.S. Commissioner of Education, have the widest possible impact on the program of vocational and technical education in the nation. Innovation and generalizability, therefore, are two of the prime requisites of an approvable proposal. For this reason, strong emphasis should be placed on the importance of allocating adequate funds at the state level to support research and development programs wherein the primary focal points of interest are restricted to state and local programs. Many states already have allocated a portion of funds for research and development activities. In Indiana, for example, the State Board of Vocational Education passed a resolution authorizing $15,000 in Fiscal Year 1964, and $40,000 thereafter to be assigned to research and development programs for which local school corporations or colleges and universities could make application. The action of this Board, together with the actions of other boards, preceeded the action of Congress to make funds available for the support of research and development activities as is provided under the provision of Section 4 (c) of the Vocational Education Act of 1963.

The action of Congress to make Federal funds available for the support of research and development programs does not negate the importance of providing financial support of programs within the several States. The provision of funds for ancillary services, which are available to the several states, and which, at the discretion of the State Boards for Vocational Education, may exceed the minimum of 3 percent of Federal funds allocated to the States, provide states with additional resources for research and development activities, and judicious utilization of these resources within the States should be encouraged to the fullest extent possible.

Returning to program operation at the national level, I am pleased to report that, in my opinion, there is no evidence of a paucity of ideas for research and development projects in the research, training, developmental, experimental, and pilot programs. On the contrary, there has come forth from teachers in the field and from experienced researchers, from personnel in State Departments of Education and from established research organizations, from the experienced researcher and from persons who are submitting their first proposal for consideration, a large number of intriguing, innovative, practical, and researchable ideas, which have been approved or are in the process of being approved, and which, I believe, will further vocational and technical education in the United States. But even though I argue that there is no paucity of ideas for research and development, I would hasten to add that, in my opinion, there is evidence of a paucity of time allocated to persons interested in contributing to the future of vocational and technical education through the initiation and execution of research and development projects and programs for the full and complete development of such projects. Funds for research and development programs provided at Federal and State levels should be regarded as an instrument of progress to be allocated to proposals upon which adequate time has been devoted for their full and complete preparation.

Participation in research and development activities is not the sole responsibility of the nucleus of educators who are assigned to these activities by reason of interest and academic preparation, or who wish to make their principal contributions to the continued improvement of vocational and technical education through research and development activities. These responsibilities must be shared with all persons responsible for the administration and organization of vocational and technical education.

If progress is to be effected in vocational and technical education through research and development programs, it is imperative, therefore, that persons interested in making their contributions to the future of vocational and technical education through these avenues be identified, adequately prepared, and supported in their efforts. Not all vocational educators are interested in these activities. But the process of progress is a team effort to which all persons may contribute. The climate for research and development which is created and maintained within a State Department of Education or within the teacher education department of a college or university is as vital to the success of the program as the actual participation of the program. Part of the climate refers to the freedom of operation which is granted to the researcher or developer. But freedom must be tempered with integrity, and integrity dictates a dual dimension. On the one hand integrity associated with freedom demands that the researcher or developer selects problems which are relevant, vital, and essential to the welfare of society. And on the other hand, integrity refers to the wise and judicious request for and management of financial resources available for the development of ideas. It is imperative that financial resources appropriated from federal and state or private funding sources be regarded as instruments of progress as translated through the human resources available to the researcher, and it is equally imperative that the researcher regard his own abilities as instruments of progress which may be translated into reality through the medium of the financial resources which may be made available to him. And both human and financial resources are to be regarded as vehicles for the welfare of society and the individuals to be served through programs of vocational and technical education.

I have been requested to give attention to the elements of developing a proposal for submission to a funding agency, such as the Division of Adult and Vocational Research of the U.S. Office of Education. Education, in America, is quite largely a public enterprise supported with funds obtained from the financial resources obtained by taxation. It is entirely logical that research and development programs related to education be supported from public funds, as are such functions as instruction and counseling. But whereas funds to support instruction may be distributed on a proportionate per capita basis, prudence dictates that funds for research and development be allocated on the basis of the merits of the proposal and the financial resources needed to assure the adequate completion of the project.

The formal proposal has become the basis which has been utilized by the Federal government for supporting research and development programs. Although the fund administration agency, such as the Division of Adult and Vocational Research, may establish priorities and suggest areas of research and development, the major responsibility for the initiation of a proposal rests with the individual researcher or developer, or, perhaps, a research and development team. As was mentioned earlier, the idea is the thing. But it is imperative that the idea be developed to the extent that the initiator communicates clearly to the person or persons who are called upon to render professional judgments regarding the suitability or feasibility of the program, details regarding the nature and importance of the idea or problem, the objectives to be attained, and the procedures to be used. In short, the proposal must show that the initiator knows and understands exactly what he proposes to do, what work has been done previously that bears upon his problem, and how he plans to proceed. I have selected seven elements of a sound proposal for further treatment.

### A. The Development and Elaboration of the Problem

The development and elaboration of the problem includes the translation of the initiator's idea into the statement of the problem, the presentation of supporting evidence in the form of review of related literature, the formulation of a theoretical framework or construct, rationale, or model, and culminates in the statement of the objectives of the study.

The problem. I suggest that the problem be stated in broad terms at the beginning of the proposal, preferably in the first paragraph. The statement of the problem may be followed by supporting arguments for the importance and significance of the problem.

The review of literature. Ideas are not generated in a vacuum. They emerge from a chain of experiences based upon the initiator's own experiences and the experiences of others. It is essential that this chain of experiences be woven into a workable rationale which sets forth the observations, experiences, and research and development background from which the central idea sprung, and which will point to the direction that the research, training, or development program will take. The review of literature that is requested in the Conditions and Procedures, OE-4262*, for projects to be submitted under Section 4(c) of the Vocational Education Act of 1963 serves as a basis for reviewers to ascertain the extent to which the initiator has devoted time to determine what research and development programs have been completed which impinge upon the central idea or problem from which the rationale or framework is to be based. No proposal is regarded lightly, but proposals which do not include adequate evidence that the initiator has given adequate attention to previous work tend to fall short of acceptable standards for approval.

---

*Conditions and Procedures: Grants for Research Training, Experimental Development or Pilot Program - Vocational and Technical Education. OE4262, U. S. Department of Health, Education and Welfare, Office of Education, Washington, D. C., 1964.

The rationale. The rationale, theoretical framework or construct, or model is a brief conceptualization of the problem, based on the problem itself and the review of related studies. In more basic studies, the rationale consists of the theoretical statement that the initiator wishes to test. In applied research, the rationale consists of an operational statement of the proposal. In experimental, developmental, and pilot programs, the rationale consists of a descriptive statement of the innovation. The rationale essentially is a transition step in the chain of logic in which the initiator bridges the gap between the previous work to be done and the objectives of the proposal in which he conceptualizes the basis of the problem.

The objectives. The development and elaboration of the problem culminates in a statement of objectives of the proposal. The objectives should be stated as succinctly as possible. When appropriate, they may be stated as questions to be answered, or, in the case of statistically designed studies, as hypotheses to be tested. The objectives determine the direction of the project, guide the selection of appropriate procedures, and serve as the basis for the selection of the evaluative procedures which will be discussed in a subsequent subsection.

### B. Innovation

The second element to be considered in a proposal is its innovative qualities. Innovation is especially important in training, experimental, development, and pilot projects. If the proposal is not innovative, if it represents work which has been ongoing for a number of years and in a number of schools, then it is reasoned that the idea contained in the proposal should be part of the ongoing educational process of schools, and that the program should be funded from regular federal, state and local funds.

Training proposals should represent a new dimension in the preparation of vocational and technical educators or in the development of training programs for prospective and present workers. A regrouping of existing courses at either college or high school levels does not meet the innovative criterion. Nor is it necessarily innovative to indicate that the future of vocational and technical education will be expanded if stipends are furnished to trainees. The policies regarding stipends at present have not been clarified inasmuch as the Vocational Education Act of 1963 does not provide for stipends. This policy may be modified in the future. But even if the policy is modified, and stipends may be made available to trainees, it seems imperative that the training program itself should be innovative, and that the programs offered should represent a new and distinctively unique thrust into the preparation of vocational educators and other persons who reasonably might be expected to receive further training under the provision of Section 4(c) of the Vocational Education Act of 1963.

Essentially the same criterion may be applied to experimental, developmental, and pilot programs. These programs are essential in the total research and development program both for trying out and testing new ideas and for demonstrating the findings of significant and relevant research. It is imperative that the most creative persons in vocational education be encouraged to develop these programs. And in many cases, these persons may be found in the ranks of the vocational teachers. Many innovations in vocational education in agriculture, for example, had their inception in the imaginative behavior of vocational teachers. Members of supervisory and teacher education staffs should attempt to identify the creative, imaginative teachers, and encourage them to develop their innovative ideas. Ancillary funds avilable to the states might well be used to fund a portion of these teachers' time to enable them to develop their ideas into proposal form. Too frequently, the experimental, developmental, and pilot programs that have been submitted represent an innovation only to the specific school system submitting the proposal, and in actual practice the idea has been tried and tested in other schools.

### C. Significance of the Proposal.

The third element refers to the significance of the study, and, particularly, to the significance of the proposal for vocational and technical education. The first criterion applied to the evaluation of proposals, as set forth in OE-4262, calls for a judgement as to the significance of the proposal to vocational and technical education.

As the research and development program administered by the Division of Adult and Vocational Education develops, it is hoped that an optimum balance will be achieved between basic and applied research, and among research, training, and experimental, developmental, and pilot programs. Undoubtedly, there is both the need for and interest in research and developmental programs which involve the related disciplines which support and give depth to vocational and technical education programs. But if the research is defined as basic research, it is imperative that a clear-cut relationship be developed between the basic area of the research problem and the furtherance of vocational and technical education. If the proposal deals with basic educational skills, such as reading, it is necessary that the proposal demonstrates how such training is to be related to the preparation of persons for initial entry into the labor force. Hence, if the initiator prepares a proposal which deals with the problem of reading effectiveness of junior high school students, then it is necessary that he demonstrate how this work is to be related to preparation of occupational proficiency or for initial gainful employment at the high school or post-high school levels. It is also necessary to show the evaluative criterion to be used to demonstrate the efficiency of the program.

## D. Design or Plan

The design or plan, or procedures, in any research and development program should be presented in sufficient detail so that the reviewer of the proposal can ascertain (1) whether the initiator has given adequate attention to planning the procedures by which the objectives of the project are to be attained, and (2) whether the procedures are appropriate for attaining the objectives. Specific points to be emphasized in each of the three types of programs which may be submitted under the provisions of Section 4(c) of the Vocational Education Act of 1963 follow.

Research programs. Adequate attention should be given to the description of dependent variables or criterion measures, to the identification of classification and treatment factors and to their levels, to the experimental design in statistically designed experiments including the test statistics, and to controls of the experiment, such as randomization, classification, and the use of the analysis of covariance. Where the study involves the two traditional levels of a treatment factor, the treatment and the "control," attention should be given as to how the experimental environment or "Hawthorne" effect is to be controlled. Sampling procedures should be explained thoroughly, and if a stratified sample is used, the rationale underlying the stratification should be explained. The population of interest should be clearly defined. Research programs may assume a variety of forms, such as historical research, sample surveys, descriptive studies, predictive studies, analytical studies, and statistically designed experiments. But they have in common, tightness and adequacy of design, adequate delimination of the scope of the study, adequate attention to procedures, and the selection of appropriate methods of analysis and test statistics.

Training programs. In the design or plan of training programs, emphasis is placed on the content of the training programs. Adequate rationale should be developed in terms of the appropriateness of the content, how the training program is innovative, how it is to be organized, and modes of presentation.

Experimental, developmental, and pilot programs. The design of experimental, developmental, or pilot programs should give adequate attention to the design of the programs, the subject -- schools or individuals -- for which the program is appropriate, the methods and materials to be used, and the details of the plan of operation. Even though the developmental features of these programs will likely be a part of the process of the program -- for example, one of the objectives of the program may be to develop new curriculum materials in response to a specific problem of interest -- the general feature of the materials should be specified in the plan of operation. The programs feature, generally, a concentration of fiscal and human resources on the locale of the study, but prudence in the use of Federal funds to support such programs dictates that the value of the program extend beyond the locale of the study. Hence, it is imperative that the description of the program relate the locale to a general class of locales, and that the generalizability of the program be emphasized.

### E. Evaluation

Evaluation refers both to the methods or techniques of collecting data to be used in measuring the effectiveness of the program and to the selection and/or preparation of appropriate instruments of criterion measures or dependent variables.

Evaluation is a weakness inherent in most of the proposals which have been submitted. This is especially true of most of us whose background has been in vocational and technical education. Our training in measurement and evaluation has been limited largely to one or two courses in test of measurements offered as part of a master's or doctor's program. Regardless, if the proposal which we are preparing is a research proposal or an experimental, developmental, or pilot program, we are hypothesizing, in effect, that an effect or difference in gain in some aspect of human behavior is likely to result from the program or treatment which we envision, and we must be prepared to show how this effect is to be measured. In a research program, we normally would accomplish this end by setting up a project designed to evaluate the effect of two treatments on the dependent variable or variables which are to be measured.

The data obtained from the experiment may be analyzed by an appropriate technique such as the analysis of variance, and an appropriate test statistic may be applied to determine whether the effect approaches a predetermined standard which is set by the experimenter. In developmental, experimental, and pilot programs, the effect, that is the difference in gain, related to the dependent variable or criterion measure is more difficult to detect. One school, for example, does not constitute a sample, and the use of typical statistical procedures is not especially appropriate for the single program. Further, a pilot program represents something special. Attention is focused on the pilot program, people are involved and interested in it, and this involvement or interest in itself is likely to produce an effect. Yet it is possible to apply a reasonable degree of objectivity in the evaluation of the effectiveness of an experimental, developmental, or pilot program. Norms or standards may be established, based upon the past history of the school, or based upon established norms which are available for standardized tests. The researcher may determine on the basis of his best judgment the standard he would be willing to accept as evidence of the effectiveness of the program, taking into consideration both the nature of the program and the likely effect which may be attributable to the special involvement of the professional staff, the students, and the community.

Perhaps the most difficult part of the evaluation of the results of the program rests in the relative absence of standardized tests. New tests may need to be developed, and when these new tests are developed, standardized norms are not readily available. If this is the case, then it is necessary to demonstrate how the tests are to be standardized, and how the results are to be used in the evaluation of the program. Not all outcomes can be, nor should they be, measured against standardized tests. In one study, the development of a procedure was proposed as one of the basis of evaluation. Also involved in the evaluation was the number of persons to be enrolled in vocational programs in the school, and the increase in dollar investment in vocational and technical education which might be attributable to the involvement of the people in the program.

In many instances it is desirable that the evaluation procedures not terminate with the termination of the formal training program. It is desirable that follow-up measures be taken in order to determine whether there is any evidence of permanance of the effect generated. The length of time of follow-up measures may be somewhat difficult to set as an absolute minimum. It probably would be desirable if the program deals with high school students to evaluate the program at the end of ten years. Most projects will not run for this length of time. Follow-up measures taken at the end of two years would certainly be superior to evaluation at the termination of the formal instructional period.

### F. Personnel and Facilities

The fifth relative absolute pertains to adequacy of personnel and facilities. It is not necessary that each person initiating the proposal be regarded as a national figure in research and development in education or in vocational education. Each of us must get our start somewhere along the line. From a tactical point of view, it perhaps is desirable to initiate a research and development program with a relatively modest proposal. But if the project calls for a much larger budget in order to assure the effectiveness of the proposal, some questions regarding the competency of individuals conducting the proposal may be alleviated by ascertaining that at least one member of the research team be a person who has demonstrated proficiency in research and development. Wise and judicious use of consulting personnel is another technique which may be used effectively to demonstrate that competent advice regarding the development of the problem is available to the researcher. Narrative descriptions of the qualifications of the key personnel are desirable, but it is equally desirable that adequate evidence regarding the competency of the key personnel be supported with references to the previous research work of the individual.

In defining the qualifications of the personnel, modesty is no particular virtue. Lists of publications which support and attest to the experience and qualifications of the key personnel are extremely desirable. Few proposals are denied support due to inadequate facilities. But it is equally important to demonstrate that the researcher has the necessary sources available to his disposal in order to assure the successful completion of the project.

### G. Economic Efficiency

The last element relates to the economic efficiency of the project. The economic efficiency of a project is a matter of judgment. But the judgment is based upon experience. It is extremely important that the project not be overpriced. Excessive and unnecessary replications are to be avoided. Hence, if a project is designed to evaluate the effect of a methodology or materials on some dependent variable of interest, one or two replications may be adequate, and nothing much may be gained by running the same project for two or three years. Fortunately, the contracts and grants section of the Division of Adult and Vocational Education has taken the highly enlightened view of contractual arrangements, and while questions regarding specific items may be raised, there nevertheless is intense desire to ascertain that the budget is adequate in order to obtain the objectives of the program.

I have enumerated elements of a sound proposal. To a certain extent these elements relate to the weaknesses which have been observed in a number of proposals. The limitations cut across the board and are not pertinent to any single discipline in vocational education. With regard to weaknesses, agricultural education does not differ from the other vocational fields. Time has been spent in the development of research competency among agricultural educators in the regional research conferences which have been in effect throughout the nation for a number of years, and through the national seminars on research in vocational education as has been reflected in the relatively large number of proposals funded from the agricultural education group. The problem of assigning adequate time to research and development as a part of the individual's work assignment applies to agricultural education as well as to the other fields. If agricultural education is to continue to assume leadership in research and development, it is imperative that staffing assignments be re-examined and the persons who are interested in research and development be assigned activity for this area. In my estimation, the most creative minds in the vocational education field should be assigned and channeled into the area of the developmental, experimental, and pilot programs.

Even though a relatively large number of proposals have been approved in which the key personnel represent vocational education only, I am inclined to believe that a far greater impact upon the future of vocational and technical education may be made through the involvement of the related disciplines in such fields as sociology, economics, and psychology to the problems of vocational and technical education. The problem of motivation, for example, is a persistent problem in vocational education, and here we may well rely upon and build upon the research of the sociologist. Although the educational psychologist does not necessarily have a monopoly upon measurement and evaluation, it seems reasonable to assume that any measurement and evaluation program may be augmented through the establishment of a working relationship with personnel who are trained as educational psychologists. The team approach to conducting research generates problems in itself, but if the team can be marshalled and organized toward the goal of the project, then the outcomes may more than offset the problems of team research.

## Summary and Conclusions

It was suggested that attention be given to some specific suggestions for preparing proposals. I should like to fulfill this assignment by first listing some positive suggestions, then re-emphasize some of the points which have been mentioned by presenting a list of points to avoid in the preparation of proposals.

### A. Some Positive Suggestions for the Preparation of Proposals

1. Start with a significant problem or innovation, and build a logical and coherent chain of reasoning and experiences for the statement and elaboration of the problem through the objectives, procedures and evaluation. State exactly what is to be done in a straightforward manner.

2. Delimit the problem to a manageable part of the area with which the problem is concerned, but demonstrate generalizability.

3. Show the experiences from which the problem evolved, present and analyze relevant studies, and state the rationale or model which is to serve as the basis of the study.

4. State the objectives succinctly.

5. Detail the procedures to denote clarity at each step.

6. Show that the treatment to be used, the training program to be offered, or the innovation are significant, appropriate, and operationally feasible.

7. Use an appropriate design which will permit the testing of hypotheses and the control of extraneous variables, with adequate attention to populations and samples.

8. Work out a complete plan of evaluation and measurements. Show how instruments are to be constructed, if new instruments are needed.

9. Integrate objectives, hypotheses, procedures, and evaluation.

10. Show adequacy of personnel. Use consultants where needed. Specify names of personnel, and avoid large scale listing of qualified specialists who have not been contacted to serve as a consultant on the project. List completed studies and publications of key personnel.

11. Price the project judiciously.

12. Show how results are to be disseminated.

## B. Some Points to Avoid in Preparing Proposal

1. Don't write in terms of generalities. Avoid such phrases as "Much has been written," "It is a well-known fact," "This is a new and unique idea."

2. Don't start the proposal by the tearing down process. All that has happened in the past is not wrong or inadequate. Build on the good, the sound, the known. Show deficiencies or weaknesses which are of interest in the proposal, but use these elements as appropriate points of departure for the study.

3. Don't try to include everything in one proposal. Delimit and select the important elements which represent the greatest concern.

4. Don't delimit the generalizability of the project. The locale of the study should be somewhat incidental. The selection of the schools, if not selected randomly, should be made on the basis of representativeness to a number of comparable schools throughout the state or nation in which the innovation might have possibilities.

5. Don't assume knowledge of the problem on the part of the reader or proposal reviewer.

6. Don't build a project around a single instrument or even a group of instruments.

7. Don't use the 4(c) funds to support instructional programs that should be carried out as part of the ongoing vocational education program. Do apply for support to innovate, develop, evaluate, and demonstrate.

8. Don't expect a small idea to carry a large budget in a developmental, pilot or experimental program.

9. Don't fail to budget for specialized personnel, if needed.

10. Don't extend the duration of a project for an unnecessarily long period.

11. Don't be hasty. It is better to miss the deadline than to have a proposal disapproved.

12. Don't ignore the Condition and Procedures, OE-4262.

Nearly a half century has elapsed since the enactment of the Vocational Education Act of 1917. We in vocational education have concentrated largely upon the operational and instructional phases of the program. We have prided ourselves on being practical educators, and we have not assigned an adequate proportion of our time and resources to research and development activities. Sometimes, I fear, there has been an attitude of skepticism toward research and development activities. Now times have changed. Research and development activities are a valuable commodity. There are important and significant problems to be solved, and financial resources have been provided to be used to solve the problems. I believe that it is vital and imperative that those of us whose background of experience and training is in vocational education should participate in research and development activities. I believe that we have adequate sources of talent among ourselves to participate in these activities fully and effectively. Those of us who are interested in making our contributions to the welfare of society through the study of problems of vocational and technical education need to dedicate ourselves to discipline that such activity requires, and to developing the necessary technical skills required for effective participation. If we meet the challenge at hand, then we may expect to take our intrinsic satisfaction from the contributions we make to the welfare of individuals by helping them to prepare for occupational activity, and, at the same time, elevate research in vocational and technical education to the prominence that it deserves.

# ARE WE ASKING THE RIGHT QUESTIONS?

by

Lester S. Kellogg
Director of Economic Research
Deere & Company

## Introduction

Gentlemen--I, too, along with the other speakers, am pleased to be here. The sessions so far have been most interesting, and I regret that I will not be able to complete the whole week with you.

Your work and the subject of this Seminar are, I assure you, of great interest to Deere & Company. All of you know John Deere, I am sure, and most of you have been acquainted for many years with members of our organization who have spent their lives in dedication to agriculture, and some of them especially to vocational agriculture. Those of you who have taught courses in vocational agriculture have, in nine cases out of ten, probably used our textbook, "The Operation, Care, and Repair of Farm Machinery," which, I am told, continues to be one of the outstanding textbooks for high school use in farm mechanics.

Deere wants to continue to help in education for agriculture and will watch with interest the continued results of your efforts and especially those which will be directed in the future to research in vocational agriculture.

In speaking to you here, I speak as a member--a free, responsible member--of the Deere organization. I represent the Company only in a sense; I do not speak for the Company as such, nor does any other member of our organization do that. During my working career I have been employed by several large universities, the Federal Government, and one big, private enterprise. Of all of these, I have enjoyed greatest freedom in the latter. It is with the responsibility that such freedon requires that I speak to you sincerely this afternoon.

The subject of my talk, in the light of what I have heard so far yesterday and today, leads me to believe that I should have added a subtitle. If I had, my talk should be entitled, "Are we Asking the Right Questions--or Are We Letting Our Biases Show?"

"Are we asking the right questions?" can only be answered in the context of our objectives--our goals. Perhaps this paper should start by asking the more basic question, "Have we established the right goals?"

This is a seminar, according to Bob Taylor, on "Program Development and Research in Agricultural Education." It is organized under the banner of The Center for Research and Leadership Development in Vocational and Technical Education. These are words. I find myself somewhat baffled by them so that I've concluded for myself that you are here because you believe that vocational education is important--perhaps essential for some goals. Your major, real interest, though, is in vocational agriculture, and, more importantly than anything else, in how to be successful in dipping in the public till. In fact, most of you set out to engage in vocational agriculture--teach probably--and now find it necessary to change your directions--to initiate, participate in, even direct research, mainly because money is available. But how do you relate research to these changes? What kind of research do you really want to do?

If I were in your position and having to change direction, I should choose that path which should take me toward serving the greatest need. Is the purpose of your research to provide the guide lines--the navigational markers--to meet these needs? If so, the research that will point toward desirable objectives has largely been done. To the extent that the necessary research is still incomplete, the major gaps can be quickly filled. So what are the major questions--the major right questions?

You will say pilot studies--developmental guide lines--but are you philosophically really ready to accept what your research may suggest?

Several years ago, my attention--quite by accident--was directed to the court-martial questioning of Brigadier General Billy Mitchell. I have found it extremely stimulating and perhaps appropriate for the kinds of discussion under way here.

Remember--and some of you will--that in 1925 General Billy Mitchell was court-martialled for insubordination for the way he criticized his superiors for their failure to see the future of air development as clearly as he could see it. Listen to the following sample of questions put to him and his answers:

| | |
|---|---|
| Prosecutor: | You say that "In future wars soldiers will invade by leaping in parachutes from airplanes." Would you care to reveal who gave you this startling information? |
| Mitchell: | Nobody gave it to me. It's quite obvious to anyone with the slightest foresight. |
| Prosecutor: | It is your actual belief that this country is vulnerable to attack from the air? |
| Mitchell: | In the foreseeable future. |
| Prosecutor: | Colonel Mitchell, do you have any idea of the width of the Atlantic Ocean? |

| | |
|---|---|
| Mitchell: | Approximately 3,000 miles. |
| Prosecutor: | You say that "Airships traveling 1,000 miles an hour will fight each other in the stratosphere." Have you any comprehension how fast a thousand miles an hour is? Do you know that it is faster than the speed of sound? |
| Mitchell: | Approximately 250 miles faster. |

Since a good deal of my work relates to the long look ahead for agriculture and the farm machinery industry, I am going to show you a few charts and then describe what projections of the trends may portend. Usually I use these charts in the context of the implications of the long-range projections for agriculture and our industry and management groups. In this instance, I shall tell you briefly what they seem to say to management, and I will raise questions for you about what the trends may say about whether you are "asking the right questions."

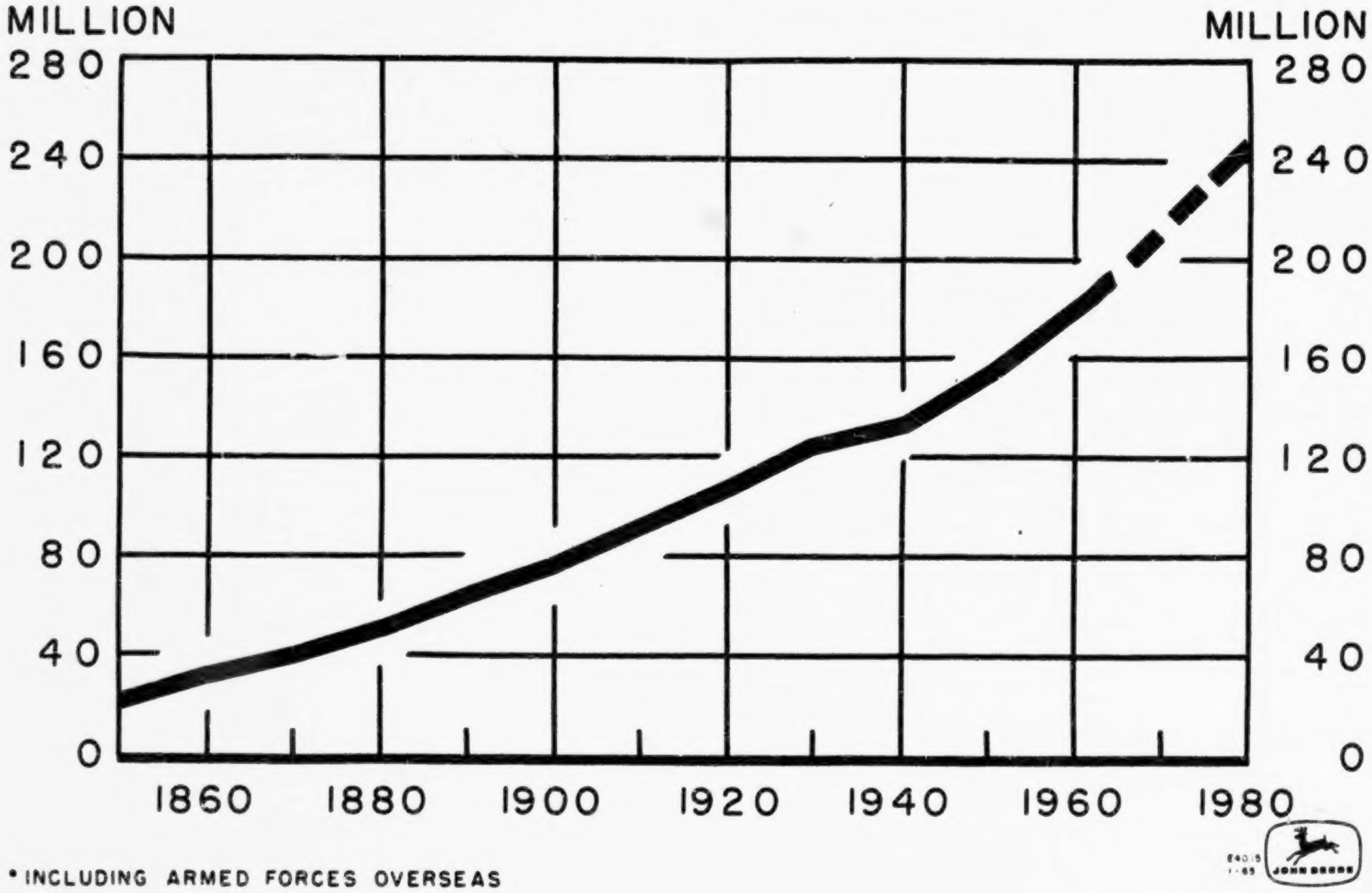
## United States Population

We all know that U. S. population continues to grow at a rapid rate. By 1980--just fifteen years away--we can expect a population of 240-280 millions. The figure is more likely to be in the neighborhood of 250 millions. In the next fifteen years we will add one-fourth as many people as in our whole history to date. That's a lot of people! Since my birth, the population has increased some 125 percent!

For management, such a growth in population indicates that the demands for agricultural products will continue to grow. To satisfy such demands will require continued growth in agricultural demands for capital and supplies.

For you vocational educators, the population growth also reflects increasing demands for all of the goods and services required by an increasingly affluent society, rural and urban. To satisfy these demands will require workers with the education, training, skills, and qualities necessary to support the growing affluence. This broad area of demand will obviously be the greatest challenge that can be laid down for those of you responsible for education--elementary, secondary, vocational, collegiate, graduate and adult. Of all the demands an increasingly affluent society will make, those for various kinds of services will be greatest. To satisfy such demands requires of those who serve--in addition to skills developed through vocational education and training--understanding and willingness to serve. Closely associated with willingness to serve are those personal qualities of health, grooming, patience, courtesy, etc. The youth of every sector of the economy must be challenged, including those from rural areas, to whom most of you have dedicated your efforts.

U. S. POPULATION*



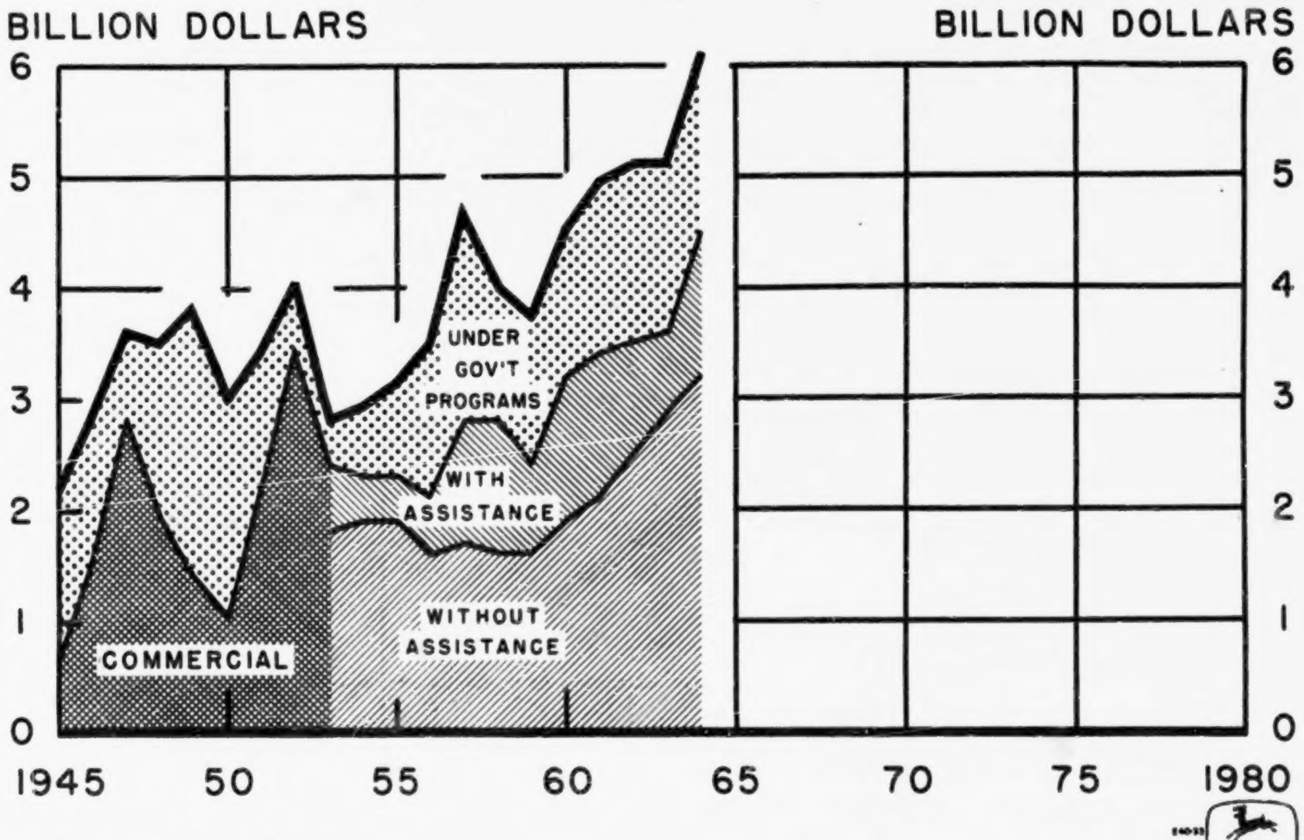
*INCLUDING ARMED FORCES OVERSEAS

Exports of Farm Products

The United States--in fact, North America--in the future will supply--in addition to the demands of its own population--the demands for food and fiber of many other parts of the world. Casual observation should confirm--detailed study will convince--that, at current and near-future rates of population growth, most other parts of the world are not able--and will not be able in the foreseeable future--to meet the demands of their people for their subsistence--let alone good health and longevity. Exports from North America will increasingly, as time goes on, help meet these needs.

For management, this means added support for increasing demands for highly productive farm machinery and equipment.

For you, it adds several dimensions to the education and training of young people and adults and should provide additional incentives for the exercise of many different aptitudes. As we talk about exports and



EXPORTS OF FARM PRODUCTS

YEAR ENDING JUNE 30
SOURCE: U. S. D. A.

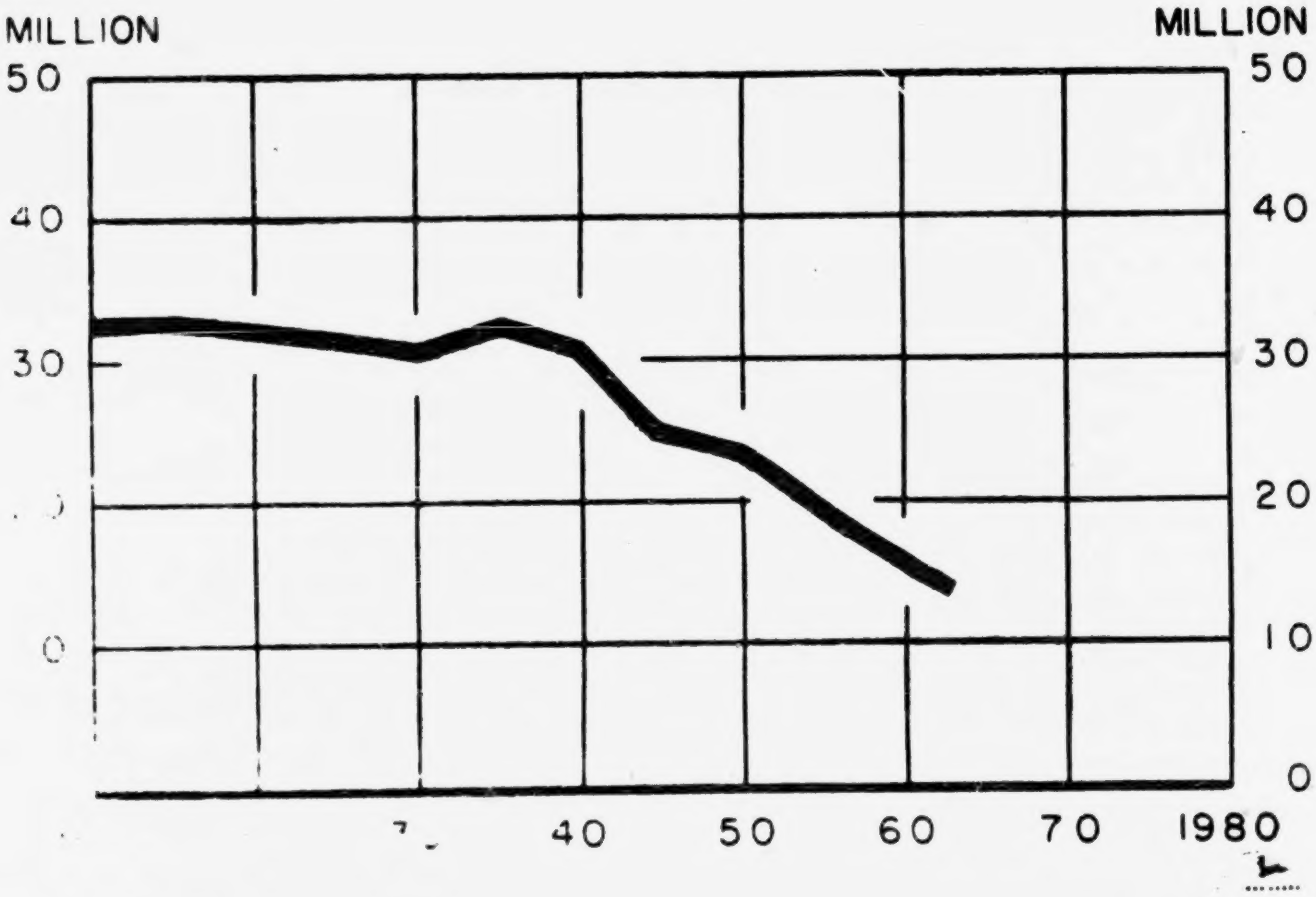
assistance to foreign areas, it is essential that we know something about those areas, that we can communicate with people of different tongues, and that we have some understanding of governments, of different economic systems, and of their basic laws. The detailed specifications of the education and training involved in these requirements, I leave to you. This may need research. This challenge alone is great. "Are you asking the right questions to understand and meet it?" I haven't heard them.

## Farm Population

Farm population has been declining steadily from its peak in the mid-thirties. It will contine to decline, and, in fact, as a description of a portion of our total population, it may disappear. If we were to define for the next fifteen years farm population as a total number of people living on what we will define as farms, the total by 1980 might be as small as 8-10 million.

In 1960, 8 to 10 percent of our total population was so classified; by 1980 the proportion may be as low as 3 1/2 to 5 percent. In England, the most advanced country in the world in this respect, the farm population amounts to 4 percent or less now.

# FARM POPULATION

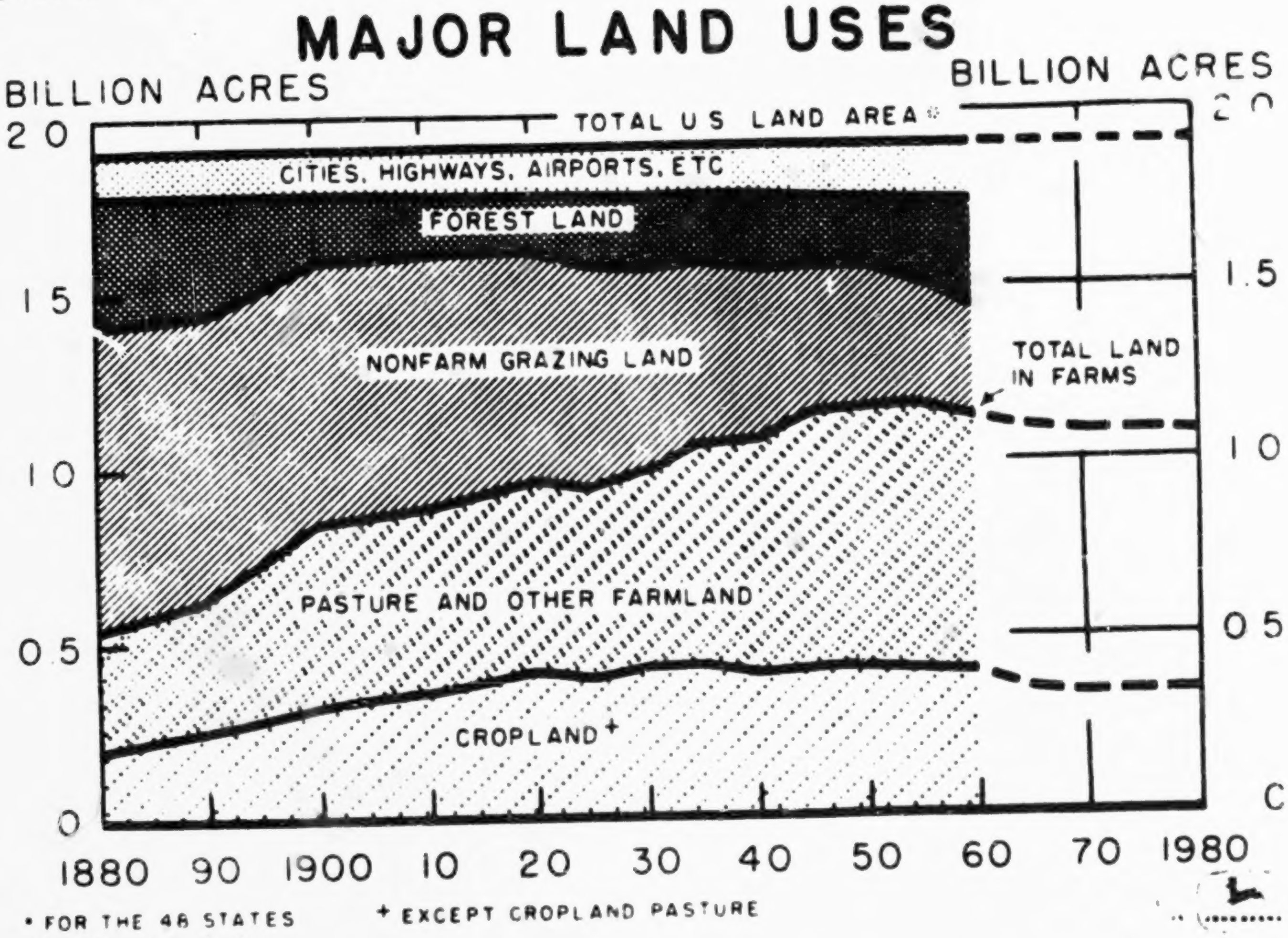


For management, this means fewer customers and fewer easily accessible machinery operators. It suggests the need for more powerful, more flexible, more functional and chore-saving farm machinery and equipment.

For you, it has several meanings. The number of young people of farm origin is declining so fast that the historic job of vocational agriculture must take on new meaning. If the young people now living on farms are to be educated, trained, and stimulated to prepare for the tasks which lie ahead, they should not be misled by devoted vo-ag teachers who, "worshipping at the altar of tradition," to quote Professor Phipps, have in the past provided such great stimuli for such young people to prepare for work on the farms. The opportunities for work in agriculture per se in the future will decline, but the opportunities for servicing this highly productive enterprise in the same ways that urban demands are met will increase. In the future there will be little distinction in the demands for service and the supply of commodities as between those engaged in agriculture and people engaged in other major productive activities. If this statement is true, the services demanded can equally well be provided by the well-educated, trained, and stimulated children of farmers, of farmers who have left agriculture in the last decade and now live in urban areas, or of those of the rest of the urban population, since the distinctions we accredited to agriculture for so long will have largely been dissipated or diffused. In fact, one of my major frustrations here is education vs. agricultural education

## Major Land Uses and Acres in Farms

From these charts several conclusions about the future emerge. The total U. S. Land areas is relatively fixed. The total land in cities, highways, airports, and forest lands -- much of which will be in parks or greens, as the Europeans say -- will increase. Nonfarm grasslands will continue to decrease; pasture and other farmland will decrease slowly; and cropland planted and harvested in the next fifteen years may continue to decline. As areas for cities, highways, and airports expand to serve the growing population, land will be taken -- usually from cropland. This, in turn, will put a draft on current farmland. This movement can go on, without greatly affecting the efficiency of our agricultural production, for a number of years.



* FOR THE 48 STATES
SOURCE U S D A

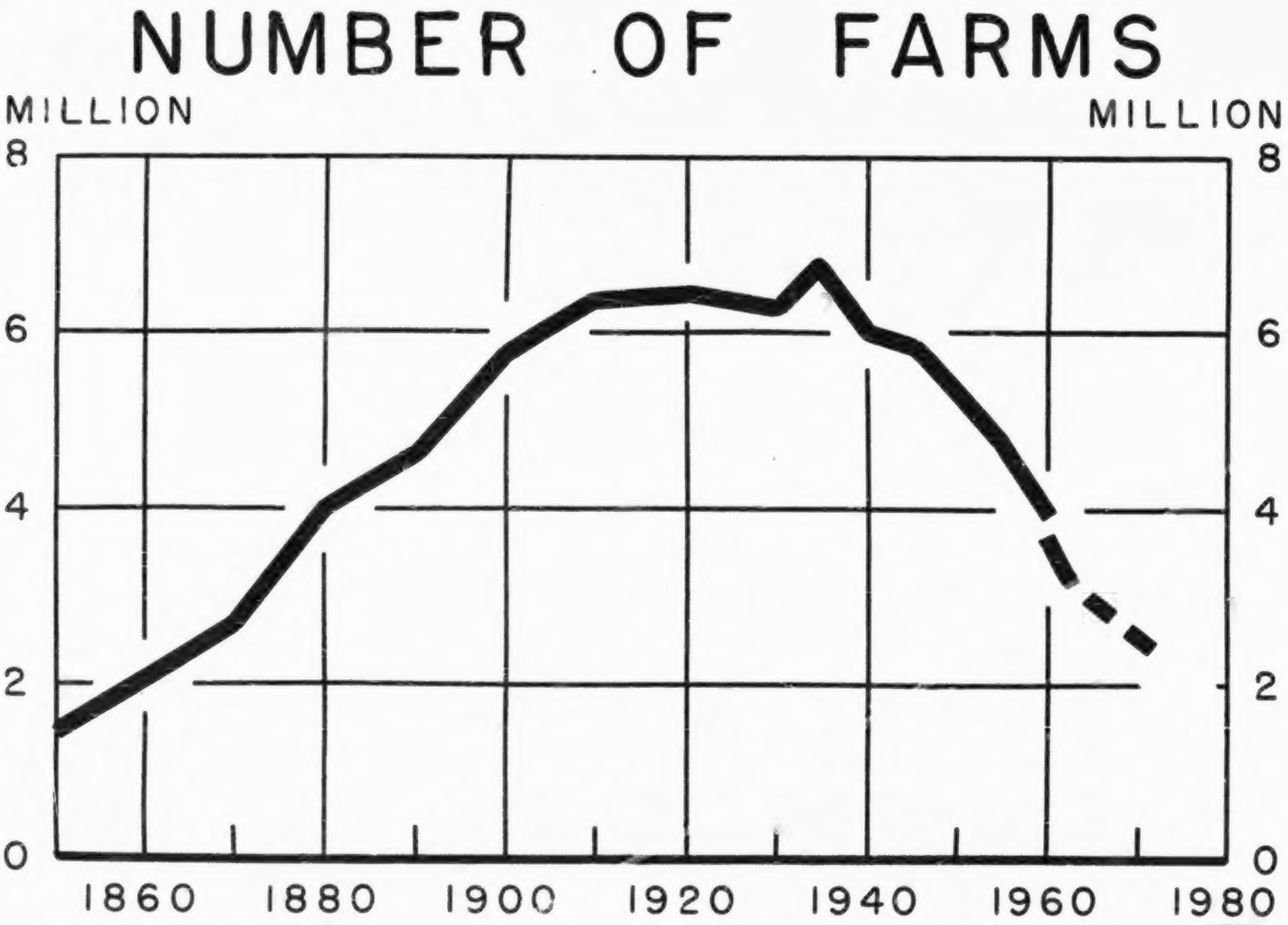
+ EXCEPT CROPLAND PASTURE

For management, the shifts in the use of land within agriculture and among the several alternate nonagricultural uses provide further support of demand for earth-moving and other types of machinery and equipment heretofore thought of as agricultural.

For you, it provides some broad bounds for imaginative thinking about uses of land which, until recent years, have been left largely to the U. S. Department of the Interior, to city planners and zoners, and urban real estate developers. As demands for recreation and the use of our natural resources for growing populations increase, additional dimensions will be added to requirements for basic education, specific training, and vocational education which will require detailed attention. These demands, of course, can be supplied -- shall I say, equally well, and if not, why not -- by people who have been reared in urban as well as in rural areas. There is no advantage that one can discern superficially for providing such training by one group as against another.

## Number of Farms

This chart makes clear that number of farms, as defined by the Census, reached a peak by 1920 and then started to decline. The decline was arrested briefly in the thirties, when, during the Great Depression, people who had left the farms returned -- usually young people -- returning to



SOURCE: U. S. CENSUS BUREAU

their relatives' homes until they could again pick up their off-farm activities. The downward trend has continued since the end of the depression and may decline to some place between 1 1/2 and 2 million units by 1980. The number of large farms will increase; the number of small farms will decrease greatly.

For management, these trends provide an additional reason for a great decline in the number of customers, but for higher powered, faster, more productive machinery and for greater understanding of the specialized and industrialized agriculture which will move ahead at a fast pace.

For you, these trends make clear that there will be fewer owners and operators of farms. Fewer of the young people now studying agriculture will have the chance to own or even to operate agricultural enterprises. The specialization and industrialization of agriculture will require less general but more specific basic education and specific training. It will put greater demands upon the kinds and quality of service required to maintain equipment. The management of the amount and nature of resources involved will be only slightly different for agricultural enterprises than for enterprises in other industries. From the management point of view, the distinction between the management of an agricultural enterprise and any other kind of enterprise will continue to diminish.

Apropos this discussion, consider how Paul C. Johnson of The Prairie Farmer[1] says it:

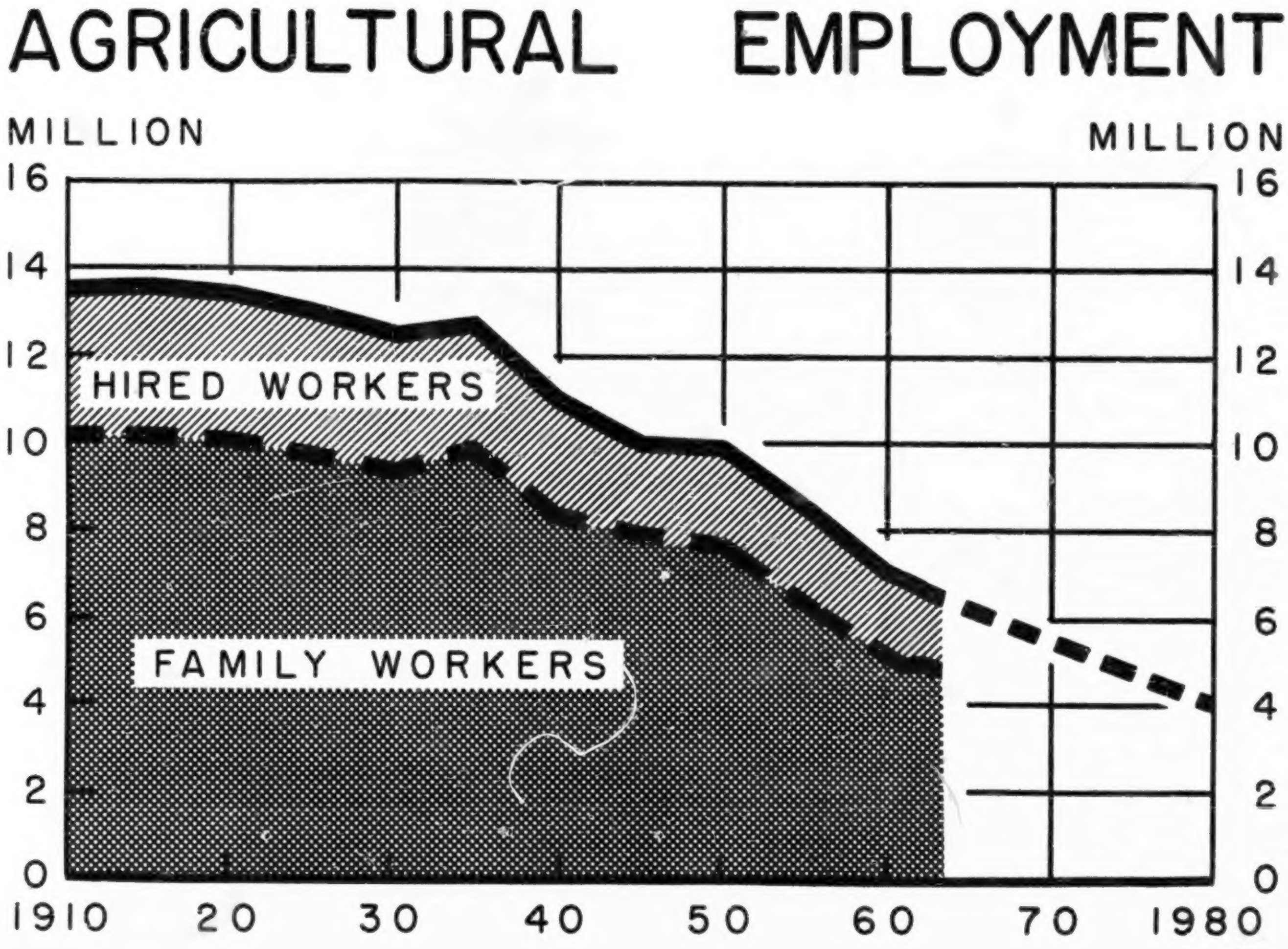
> "Consider this! The quantity and quality of farm production will continue to grow as our population grows. Somebody will be needed for this important work. As the capital requirement of a good going farm climbs to $100,000 and even $250,000, it will be harder, in fact nearly impossible, for a farm operator to own all his land. There are few people in big business or in the professions who can put together that kind of money in a lifetime. So we may have to give up the idea of owning all the land we operate. But somebody will be owning that land, and whoever owns it will have to find someone to operate it skillfully. A sloppy job won't do because taxes and interest are too high.
>
> "I predict that in the future management, not ownership, will command the highest price. This is already true in corporate business. Farmers are getting older. Before long there will be a shortage of good ones who are able to deal with the complexities of modern farming.
>
> "Farmers of the future will be well paid, but they must be equal to their task, which is a big one. They'll need brains and education, plus a knack for management. I know

---

[1] Johnson, Paul C., "What Does the Future Hold for Farm Youth?" The Prairie Farmer, Illinois Edition, June 19, 1965, p.17.

many successful older farmers who have very little schooling but who achieved self-education in one way or another. But such a course will be much, much harder in the new generation. Therefore, everyone who intends to be a farmer should have a high school education, and he can't stop there. If he can't go on to college he will have to continue his schooling with night classes, short courses, field days, and much reading and studying."

## Agricultural Employment



SOURCE: U. S. D. A.

The trends in agricultural employment -- whether we talk about the total hired workers, or family workers -- have been steadily downward, except for a brief period in the early 1900's. A mathematical projection of these trends would read zero shortly after 1980. It is clear that we cannot depend upon such a projection, but it is equally clear that there will be further substantial declines in employment in agriculture. The effects of new legislation and increased agricultural productivity in the recent past are clearly evident in the decline from the preceding year in agricultural employment, during the past fifteen months. In the last fifteen months the decline from the same month last year has been continuously in the neighborhood of 9 to 12 percent; for many years the decline has been at an annual compound rate of approximately 3 percent.

For management, these trends have been both effect and cause. The declines over the years in agricultural employment, to a great extent, have resulted from the introduction of new and more productive farm machinery and equipment. To the extent that in some instances the supply of new equipment has been ahead of the demand, the adoption of such new equipment has been the cause for further declines in employment. The current difficulties faced by those managing agricultural enterprises in obtaining labor and sufficient skills to meet their needs have provided additional incentives for labor-reducing or eliminating equipment. There is still a long way to go.

For you, these trends are convincing confirmation of the rapid declines in opportunities for individuals to work in agricultural enterprises per se. It is in this area that you must give most perceptive thought to the specific needs in the future for basic education, training, and the provision of a great variety of services, since it is so difficult to indicate what the specific requirements of the future will be.

Folke Dovring[2] raises another aspect of this problem. He says:

> "The most obvious consequence for rural areas is the thinning out of their population. When farmers become fewer, so do also many other groups of rural residents -- the service people who get fewer customers. Even though the aggregate gross income of farmers in a given area goes up, as it will in most areas, a larger part than before is spent on production requisites that, more often than not, are produced outside the areas. In addition, with country towns declining and transportation improving, farmers are likely to spend more of their net incomes in medium-sized cities at some distance from where they live, which still further reduces the scope of commercial and service activity in the country town. Thus the local tax base may shrink, and the cost of community services may go up. All of these disadvantages are not large enough to undo the advantages of the substitution of capital for labor in agriculture, but they are serious enough to cause apprehension and to start a search for remedies."

---

[2] Dovring, Folke, "When Farmers Become Fewer," Illinois Agricultural Economics. Urbana, Illinois, University of Illinois, Vol. 5 (July 1965) p. 7.

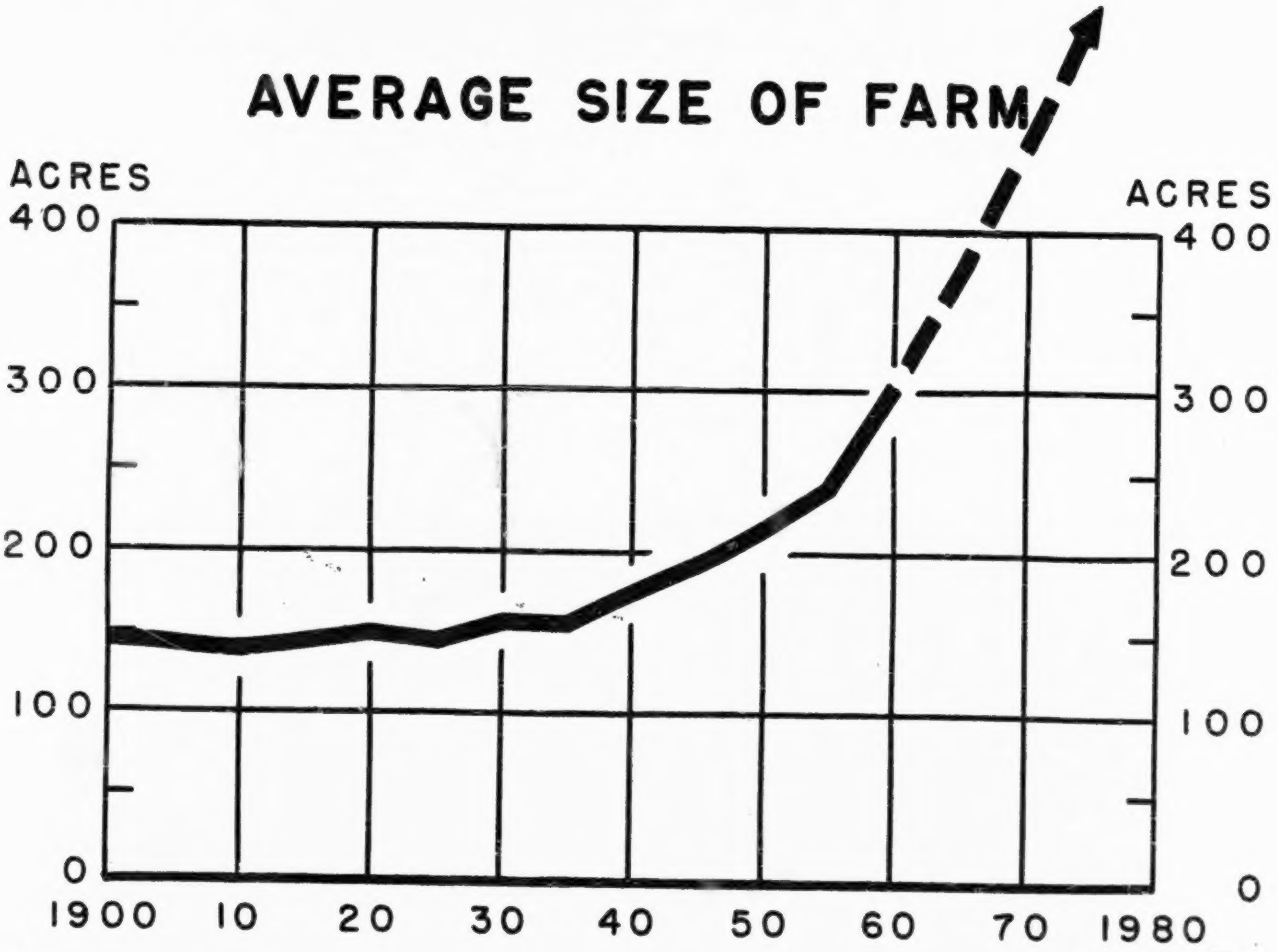
What are the right goals? Are you asking the "right questions" in the research projects you have submitted?

## Average Size of Farm

The trend in this characteristic of agriculture, as you know, has been continuously upward. In years ahead it will continue its upward course. Where or when it will stop, nobody knows. Farms are currently being consolidated at probably the fastest rates in history. To project the average size of a farm in 1980 is hazardous; more importantly, it is, to a great extent, meaningless. The reason for this is that the farm is closely related to the nature of the crop, the state of the art, and the extent of knowledge in that particular crop. Closely associated with this problem is the continuous flow of new findings with respect to the most efficient uses of and renewal of our soils, methods of tillage, etc.

For management, this information simply presents, from a different point of view, the confirmation of agirculture's needs for more productive and probably fewer agricultural units.

For you, it should be confirming of the need for greater skill in managing large aggregates of resources. It should raise questions relative to the ways in which resource management can be taught and in what educational areas it will get most attention.



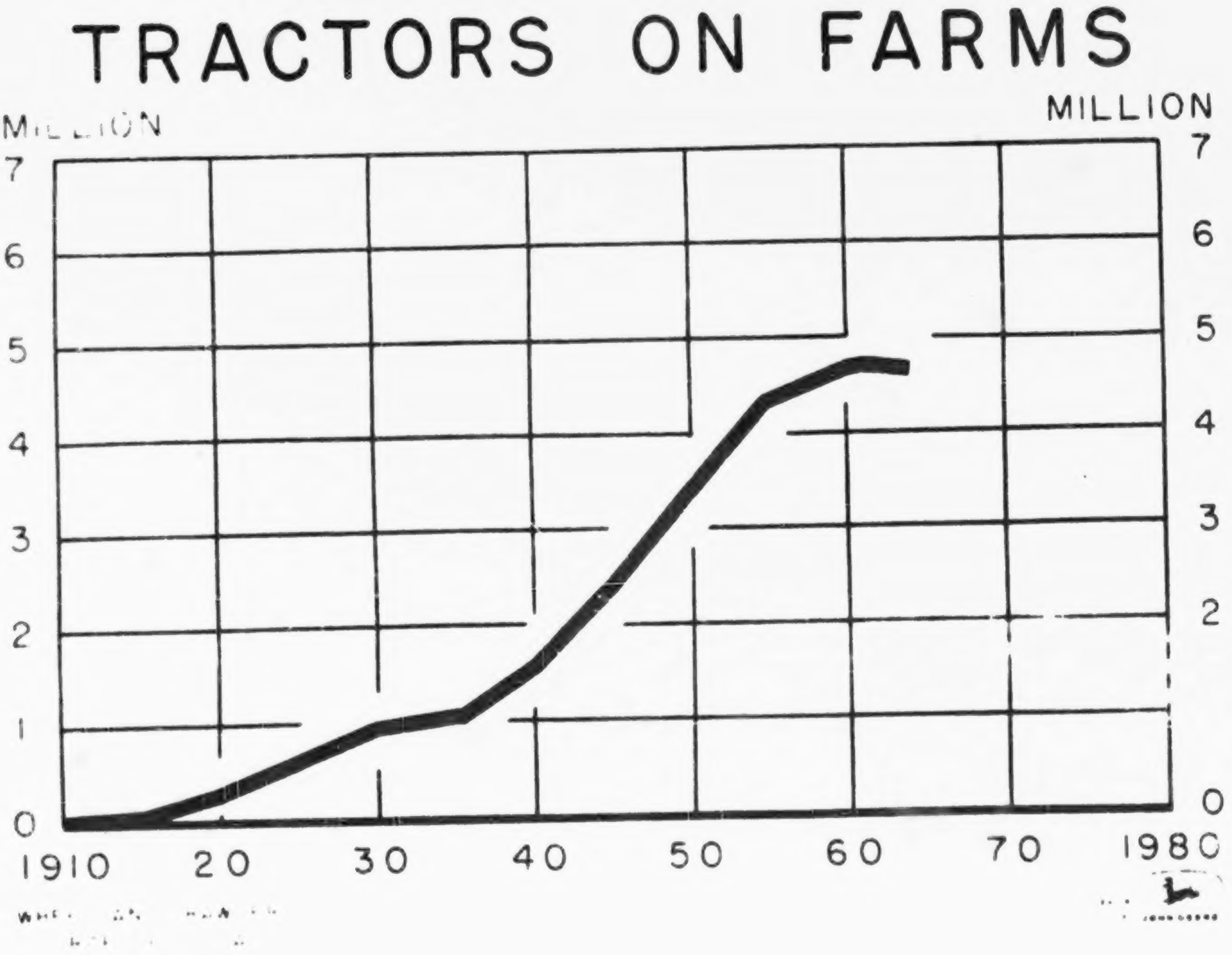
AVERAGE SIZE OF FARM

SOURCE: U.S. CENSUS BUREAU

## Tractors on Farms

The total number of tractors on farms in the United States has gradually trended up into the early sixties and is now declining. The total, however, has little meaning. The important tractors on farms are those on highly productive enterprises -- and especially those less than ten years old. What I have said is confirmed by the trends in sales to users in recent years. Retail sales have trended downward; the horsepower-per-unit has trended upward; and the total horsepower shipped was held constant.

For management, these trends also tend to confirm what has been revealed already by other trends -- that the demand for tractors *per se* will decline, but that the total demand for horsepower will continue to be high or to increase in order to provide increased productivity, flexibility of use, and comfort and safety to the operators. It is likely that the total capital expenditure for tractors as prime movers or for engines for self-propelled equipment will more than offset the reduction in the number of units required.



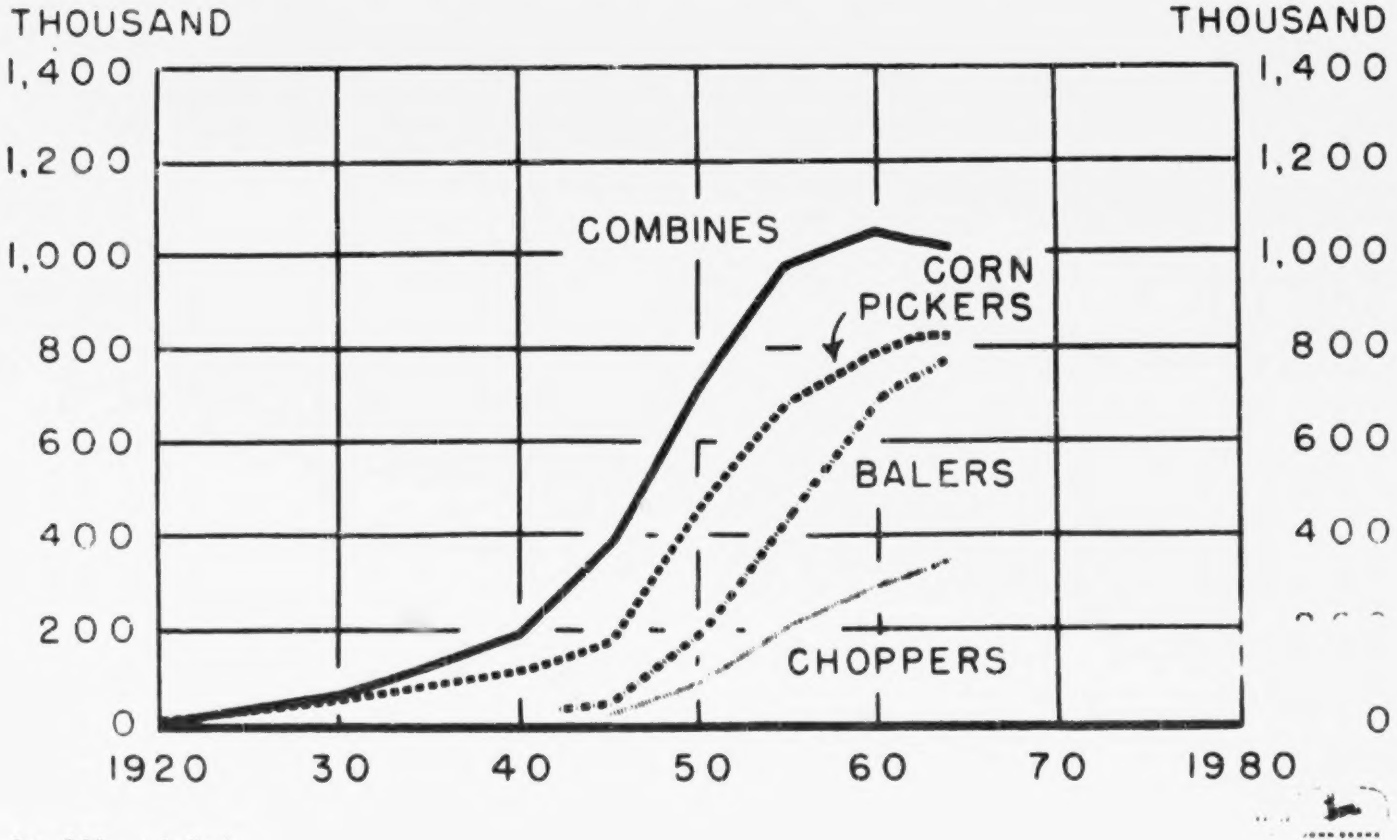
For you, these trends should confirm that there will be great demand for imaginative and able engineers, for skilled workmen, for high degrees of servicing skills since maintenance and repair of such equipment can no longer be done on farms but will, of necessity, be done by specialists with use of industrial-type equipment with high degree of accuracy and precision. This is an area that might benefit from close relationships to industry. The decision to introduce multiple-cylinder tractors was made at Deere in 1953. Servicing labor wasn't ready.

Combines, Pickers, Choppers, and Balers on Farms

The trends shown here are very similar to that for tractors. They simply lag -- usually by a few years -- reflecting later development and delayed farmer adoption.

For management, they add further confirmation of demands for more productive and more specialized equipment.

COMBINES, PICKERS, BALERS & CHOPPERS ON FARMS



SOURCE: U.S.D.A.

For you, they reveal the nature of trends for the employment of operators and support the argument for increased numbers of people with skills to service highly complex agricultural machinery. George Seferovich,[3] Editor of Implement & Tractor, made this point clear when he said:

> "Training tomorrow's farm equipment personnel is becoming a new specialty for technical schools. Latest entrant is the Springfield and Clark County Technical School, Springfield, Ohio. Its program was developed after a study of the industry's needs and with the help of Charles Whitney of the Farm & Power Equipment Retailers of Ohio. The Minnesota area vocational schools continue to develop mechanics for dealers with encouragement and placement help through Ken Austin of the Minnesota dealers' association. A different and broader approach is that of the Agricultural and Technical Institute of the State University of New York at Alfred. Value of higher education to industry is attested to by North Dakota State University survey among its recent ag college grads. Study showed private industry absorbed one-fourth of the 1964 graduating class, up from 22 percent of the 1963 class."

Income from Agriculture

The trend for cash receipts from agriculture has been steadily upward since 1940, and we believe that the trend will continue -- certainly to 1980 and beyond. Such income will be divided among many fewer recipients and will be large enough so that the agricultural enterprise can stand on its own feet to a greater extent than at any time in the last three decades.

For management, these trends indicate that farmers will have the necessary financial basis for steady improvement of their capital investment and for being treated by financial institutions as management units warranting long-range financing.

For you, these trends suggest detailed studies of agricultural operating statements and balance sheets in the same way that such management tools have been studied for other industries. They may indicate that treatment of the agricultural enterprise largely as a family enterprise is coming to an end. Consideration of this problem will lead to many questions relative to the kinds of education and training and attitudes which will be required to meet the demands of the enterprise. Especially important is that you understand that the training of young people reared on farms and that opportunities provided by the land-grant colleges have been and are deficient in this area. To the extent that this is true, managers of agricultural enterprises may preferably be selected from those nonagriculturally oriented institutions of learning which have provided the broad and basic backgrounds and narrower specialized training. Increasingly, as government legistlation -- originally designed for urban industry -- is applied to agriculture, enterprise managers must be trained in such areas.

---

[3] Seferovich, George H., "What's Ahead," Implement & Tractor, June 21, 1965, p. 13.

So much for this set of projections. We could easily expand on their implications for education and training, and we could supply projections of additional variables. Time doesn't permit.

Before leaving this approach, I want to mention several simple warnings --

First, you must try to be objective -- don't let your biases show in doing your research or in making your appraisals.

Second, your job is to anticipate the future so that education and training of young people will prepare them, to the greatest possible extent, for growth and shifts, in order to be prepared for obsolescence of their "knowledge" or skills.

A seminar dedicated to discussing the specific problems you will face -- maybe you've held it -- should be appropriate.

Now, for a couple of minutes, I want to shift directions.

Your group is not basically a research-oriented group. It has been a closely-knit, tradition-bound group, as several of you have emphasized -- nonetheless a good and highly productive one. But you have had little or no experience in asking research questions. So I raise the question, "Can you ask the right questions?"

I know you can't stop your immediate job. You have -- or will have in the next few weeks -- day-to-day responsibilities which must be carried on, and you must think continuously of these jobs. Now, in addition, you are charged with thinking of research and trying to ask questions to which research can be directed.

If you are to ask the "right questions" for which research is essential, you will, it seems to me, be required to take a look ahead at least ten to twenty years. Your research -- if backward looking -- will be mainly history unless it is very carefully done and appraised in the light of the implications for the future. You must look ahead for another reason -- to see if the product -- the vocational-trained boy or girl -- you want to develop is a new one. If it is, keep in mind that you face the same kind of a problem John Deere does. To conceive, design, and test a new product takes time -- not just days, weeks, or months -- but years. To design the new product requires asking questions and attempting to get answers to them. Can you do it? There is a possibility, of course that you can't. In this connection, I am reminded of a story recently told by Secretary of Agriculture

Freeman. A third-grade school teacher, in her arithmetic class, said, "Children, if I lay two eggs on my desk and I lay two eggs on my chair, how many eggs will I have?" Seeing no hands raised, she asked Johnny for an answer. After some thought, he said, "Teacher, I don't think you can do it."

The presentation and discussion I have heard here so far lead me to several observations:

> You are obviously worried about your image. You are on the defensive. It is my strong belief that you have no need to worry about your image if you will update your substance in the way it should be updated. This, of course, means -- asking the right questions.
>
> A second major worry that has been bothering you for a day and a half is, "How do I get on the gravy train fastest?" You haven't called it that, but that is essentially what you are talking about. You have spent the seminar's time -- not on research, how-to-ask questions, or which questions to answer, but rather on "How can I be sure to get my share of the $22 1/2 million earmarked for vocational education?" Maybe you shouldn't get any of it! Maybe it will be best if the $22 1/2 million remains unspent. I have seen no evidence that any amount of money is required -- let alone this great amount.
>
> As an economist, I am worried about your use of the term, "hard money." The diseconomies of hard money may live to haunt you. They may damage your future image. I'd be careful of it. The diseconomies will arise from the hiring of permanent staff to conduct temporary research.
>
> I am also worried about speed. The speed which you are trying to attain can be injurious. Be careful! Don't do research just to be doing research. Do it to solve problems -- and take enough time to do a good job.
>
> I am worried, too, over the need I have heard expressed here for a research program in every state. I have heard similar-sounding projects proposed by representatives from Iowa and Illinois. I live at the state boundary between the two states; I see no differences among the people on either side of the state line. I wonder why we should hazard such duplication of efforts.
>
> One of the major problems you will have -- in addition to asking the right questions -- will be that of determining the directions in which you will go.

Largely offsetting the worries which I have just expressed is the hope that the newly confirmed Secretary of Health, Education, and Welfare, John W. Gardner, will be able to instill in his department the procedures of "self-renewal" and the standards of "excellence" which he has so well developed in his recent publications. In closing, I quote from his "Excellence."[4]

> "In order to help young people in this direction, the following steps are essential:
>
> "1. We must make available to young people far more information than they now have on post-high school opportunities other than college.
>
> "2. Parents, teachers and high school counselors must recognize that if the youngster who is not going to college is to continue his growth and learning he must receive as much sagacious help and counsel as a college-bound student.
>
> "3. We must do what we can do to alter the negative attitude toward education held by many youngsters who fail to go on to college. They must understand that they have been exposed to only one kind of learning experience and that the failures and frustrations encountered in school are not necessarily predictive of failure in every other kind of learning.
>
> "4. We must enable the young person to understand that his stature as an individual and his value as a member of society depend upon continued learning -- not just for four years or a decade, but throughout life."

And now -- as a guide to a philosophy which you might consider accepting -- this is what he says,[5]

> "The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

Thank you very much for your patience and close attention.

---

[4] Gardner, John W., "Excellence," Harper & Brothers, New York. 1961. pp. 90-91.

[5] Ibid, p. 86.

## Promising Research Directions in Off-Farm Agricultural Occupations

by

Glenn Z. Stevens
Professor of Department of Agricultural Education
The Pennsylvania State University

Twenty-five states have completed comprehensive surveys of off-farm agricultural occupations. Most of them have published reports recently. Pioneering efforts several years ago in five states, California, Michigan, New York, North Carolina and Washington, established a general descriptive research procedure that has influenced all of the surveys. Richly promising new research directions are emerging.

The first needs were to learn what the jobs are, where they are, anticipated changes and trends in employment, and the kinds and amounts of education and training required for entry and for advancement. That information is now available. It is in the process of being disseminated. Interpretation is the next objective.

The initiation of organized state programs of research and the encouragement of formally approved and funded pilot projects in local and area schools, the two major emphases of this seminar, are strongly supported by administrators. New school facilities must be constructed, competent teachers hired, and effective courses planned and taught. Supervision and evaluation are of prime concern.

Instructors must devise course outlines and prepare teaching plans. Coordination with individual on-the-job learning experiences must be arranged for each student, high school and adult. Predictions are that the numbers of commercial farms will remain nearly constant in the next ten years. The competence of farmers must steadily advance. Vocational education in agriculture seldom has effectively reached more than a minor fraction of commercial farm owner-operators. The state surveys of off-farm agricultural occupations have yielded generally a clear-cut likelihood that the numbers of such positions in the total American labor force in which the worker uses agricultural knowledge will increase fifteen to thirty percent in the next five to ten years. This rate of increase closely parallels the expected expansion in the total numbers of persons gainfully employed.

Interviews with random samples of several hundreds of employers in businesses and services other than farming in each state uniformly revealed a readiness, often an eagerness, to become involved in new programs of occupational education. Business and industry surely are not reluctant partners. An amazing clarity of differentiation of employee functions, and of competencies required, was evidenced by the employers interviewed.

A first direction of research in the immediate future should be the classification of job titles by fields of activity and the grouping of subject matter areas by communalities of knowledge, skills and human relations abilities. Businesses have one group of employees whose main function is management. In some, the sales function is closely allied to management. Service occupations normally require the largest numbers of employees. New workers, especially recent high school graduates, often must enter the positions that have the fewest prerequisites of education or training.

Factor analysis of competencies and of job titles is underway in several states. There are many approaches--even numerous variations of the way that principal components analysis using the Kaiser varimax rotation procedure may be applied. As published reports are shared, research workers in the several states now using factor analysis will be able to appraise the usefulness of their findings. It is quite likely that new lists of competencies will be constructed, thus requiring a return to the field for new sampling interviews. The outcomes of descriptive classification prodedures can be no better than the quality of the questions asked. Shrewd, discerning, imaginative ability lists will surely uncover associations that will aid in better course planning.

Multiple discriminant analysis is a promising computer-based technique that will be tried in vocational education somewhere in the near future. It starts with several quantitative measures, such as competency ratings, interest inventory, and ability scores, and predicts to which one of several designated and different categories an individual belongs. Since in many small businesses an employee performs several functions, some of them quite different, there may be here a uniquely useful aid.

A second major area of research is concerned with teaching-learning experiments using subject matter of the off-farm agricultural occupations. The major independent variables may be psychological elements of learning theory or practice. Even though no significant differences are found among treatments, the instructional materials will have been tested and revised. The revision step is not to be forgotten. Available soon from the occupations project at the Center for Vocational and Technical Education, The Ohio State University, will be coordinated teaching modules in agricultural supply, agricultural mechanics, ornamental horticulture and agricultural chemicals. They are ready for research utilization. A pilot program may be planned to yield research results.

A third suggested direction for productive research is in the term "supporting education." There is a new report form of the Office of Education that asks the states for numbers of students in each vocational field who received supporting instruction furnished by another of the fields. Whether to teach distribution methodology, communications skills, or human relations areas as an integral part of a product knowledge course or as separate courses certainly is worth research funds and staff time. The answers need to come from actual school and industry settings. Quite likely they need to be replicated and validated with widely differing age groups, levels of student ability and of education, and among varying types of businesses.

As a fourth, and in this brief presentation, a last direction in which research effort can profitably be aimed, systematic programs of placement and adult counseling may be named. Post-high school education is definitely occupationally oriented. Colleges accept responsibility for the placement function. So should vocational training programs. Involvement with industry and with the Bureau of Employment Security should be the focus of research projects in all states. Reporting and record-keeping systems deserve research development. Evaluation, as envisioned in the Vocational Education Act of 1963, will be implemented at the same time.

In conclusion, credit certainly has been earned by the leaders who have sponsored the succession of research coordination conferences in the past several years at The Ohio State University. Special appreciation is due the Vocational and Technical Division, Office of Education, for support of the national, regional and state research conferences. All states have freely shared the outcomes of research. Citizen and industry groups along with experts in related professional fields have given full cooperation. They will be invaluable as, with the adequate funding now available, larger numbers of well-trained research workers address themselves to what are chosen as the most promising new directions in research.

# PRIORITY AREAS FOR PROGRAM DEVELOPMENT IN AGRICULTURAL EDUCATION

By H. Neville Hunsicker
Head
Agricultural Education Occupations Branch
U.S. Office of Education

I am sure that all agricultural educators very much appreciate the outstanding work underway by the staff of the National Center for Vocational and Technical Education. The fact that the idea of a National Center for Research and Leadership Development was initiated and championed by personnel in agricultural education should give us much satisfaction and a sense of pride.

We who are attending this National Research Seminar and our staff associates at home are the leaders in agricultural education in America today. Our role is important. What we say, as well as what we do, will determine the program's future. Let us constantly re-examine our practice which inescapably sets the direction for our program. Let us continuously modernize our practices that our training may be geared to opportunities in agriculture and the training needs of students (of all ages) who intend to be employed in it.

The following are ten high priority areas for program development in agricultural education. The first five are especially critical ones:

1. Telling the Story of the Importance of Agriculture to America
   a. Its influence on our economy
   b. Its role in our defense
   c. The declining surpluses - (50% less than in 1960)
   d. The population prediction by year 2000 (doubled)
   e. Agriculture is vital to America

2. Expanding Vocational Education in Agriculture
   a. Its identity (must be) maintained
      (1) If identity is lost, not much use to discuss program development.
      (2) We cannot expect that those whose allegiance is to some other phase of education or occupations to render the educational services needed in American Agriculture.
   b. Concept of agriculture and of agricultural education must be broadened to include: (1))Production (2) Service (3) Processing (4) Distribution (marketing).
   c. Survival and certainly further growth requires a well informed school administration and lay public.

3. Solving the Problem of Teacher Supply
   a. The shortage of teachers is the most critical in years - (an estimated 1500 new teachers needed in 1966 and nearly 2500 in 1967).
   b. Without teachers we won't need research, in-service training or other aspects of the program.

c. Study the effect of the current research emphasis on teacher supply. Is it increasing or decreasing the supply?
d. Adjustments may be needed in certification.
   (1) More emphasis on specialities such as agricultural mechanics, dairying and ornamental horticulture.
e. Special training and use of emergency teachers may be a necessity.

4. Exerting Dynamic State (and Natl.) Leadership in Agricultural Education

   a. Staff of adequate size
   b. Freedom to operate
   c. Ability to persuade
   d. Vision of future programs
   e. Willingness to plan...and do it
   f. Distribution of responsibilities
   g. Maintenance of cooperative relationships

5. Establishing Post-High School Technician Training Programs
   a. An area for immediate action - appropriate agricultural curriculum must be included in these institutions.
   b. Many general educators want vocational education to move to the post-high school level.
   c. A problem for study: Semester versus quarter system of operation.

6. Expanding Adult Education Programs in Agriculture
   a. This is one of our greatest un-met needs in agricultural education.
   b. Opportunities unlimited in Farm Management, Farm Mechanics and Occupational Specialities.
   c. Actively promote and establish programs under MDTA, Appalachia and with other financing.
   d. Make use of available resources such as ASCS, economic opportunity programs, and trade organization representatives.

7. Extending and Improving the High School Program
   a. In cities as well as in rural schools
   b. In area schools
   c. Provide respectable facilities--not toys or playhouses
   d. Caution able students about early career specialization
   e. Realistic enrollments per teacher, which will permit good vocational education
   f. Continuous work on course content will be needed
   g. Establish pilot programs for disadvantaged youth

8. Using the FFA Effectively
   a. Recognizing its indispensable role in vocational agriculture
   b. Consideration of a post-high school branch
   c. Establishing leadership development centers (camps or conference centers)
   d. Modernizing the FFA Constitution and activities

9. Preparing Instructional Materials and Doing Needed Research
    a. Establish priorities -- avoid undesirable duplication
    b. Emphasis is on applied research
    c. Continue the occupational studies--a national summary is needed

10. Emphasizing High Quality Occupational Experience
    a. Essential for students of all ages in all types of classes
    b. Emphasis on employability of graduates in terms of their training objectives.

Obviously, these areas are only a few of the ones requiring our attention in 1966. Many of them are similar to those of two, five, or even 10 or more years ago. However, as we look at the areas of agricultural education today, the experience may be compared to climbing a circular stairway in an observation tower. The higher we climb, the landscape and direction of our vision may be the same, but the perspective is different--and we can see farther. Let us then arise to the new challenges and opportunities before us in agricultural education and exert the leadership which will be required to make the needed adapations. Also, let us hope we have the right perspective of employment opportunities and of the training needs of students.

# STATE LEADERSHIP RESPONSIBILITIES IN PLANNING AND CONDUCTING PILOT PROGRAMS

by
Marvin G. Linson
Assistant State Director of Vocational Education
Colorado

As I went about the task of preparing my remarks for today, I found it difficult to be very profound for much of what I am going to say has been said before. Furthermore, I was constantly reminded, as I thought of who might be in the audience, that most of you are more knowledgeable on this subject than I am. I consoled myself, however, with the thought that as busy as we all are these days, it is well that we be reminded occasionally of those things we all know are right, but in our speed we sometimes neglect because the right way is not always the easiest or the fastest way of getting things done.

I firmly believe that although time is of the essence in our race to keep vocational education ahead of the needs of the people, we dare not sacrifice quality in our programs for the sake of speed or quantity. I am suggesting, as you can readily guess, that pilot programs can and should be our quality control in vocational education.

## Why Do We Need A Systematic, Continuing State Program for Piloting Promising Innovations in Agriculture Education?

It has been said that the one thing we can be certain of is that tomorrow will bring change. If we are to be creators and not followers of change, we need to be organized in such a way that our efforts in creating change will be as routine but perhaps better planned than any of our other day to day tasks.

I say better planned, because we dare not subscribe to or promote change just for the sake of change, and in my humble opinion the directing or creating of change is state leadership's best opportunity to fulfill its leadership function. Only if we organize our efforts in such a manner that a certain percentage of our time is devoted to designing, testing, and disseminating innovations, will we be worthy of the leadership titles we hold.

Anyone in a management position in any of our major industrial concerns today would soon find his company loosing its share of the market if he did not constantly expend large portions of their profits to make obsolete the very product which made the profit in the first place. And, furthermore, that same management person would soon find his job in jeopardy.

I suggest to you that one of the major reasons many other groups are concerning themselves with vocational education is because we have failed primarily at the state department level to provide this kind of leadership.

I realize that as supervisors we have a responsibility for defending and maintaining the kinds of programs we have described in the state plans. I, also, realize it is difficult to destroy that which we have sworn to defend.

Industrial leadership finds it possible, however, to serve the dual kind of role I have described--that of promoting the present product while at the same time they are encouraging their research staffs to find something better. Their motivation is profit. Ours is not, but it may be even more important--our very life. This may sound as though I believe we should promote change in order to preserve our jobs, and that is exactly what I believe--not my job or your job necessarily, but I am egotistical enough to believe that the state boards for vocational education in the various states provide the best structure for fostering, promoting, and administering vocational education. We will succeed in maintaining a leadership role in vocational education only if we earn the right to be called vocational education leaders. In a democracy, leadership should never be vested in anyone or any group for any other reason.

I have said, so far, that we need a systematic, continuing program for piloting promising innovations because it is essential if we are to provide the leadership function given to state departments of education by our Constitution, and I have said no one can do it as well as we can. But there are other reasons every bit as important. Vocational education has a responsibility to those it serves--the student, the employer, and society in general. This responsibility is to provide training which will enable students to enter the labor market as well trained and efficient as possible.

The rapid changes taking place in agriculture and industry make it imperative that we change our programs in order that we might never be justly accused of training unemployables. We need to know what, if any, changes in program will be needed to serve tomorrow's agriculture. We shouldn't guess. We should try out our best ideas in controlled experimental programs, so that we might disseminate widely that which is good and destroy that which proves to be undesirable.

As brilliant as some of our researchers may be, and as capable as some of our educators and educational planners may be, they have made and they will continue to make mistakes. It is the purpose of pilot programs to guard against these mistakes or to keep them to a minimum. General Motors would never consider placing a new design on the market before it had been tested at the proving gound. So, as new ideas are advanced which effect the teaching-learning process, they should be tested in pilot programs to ascertain their value in vocational education programs.

I am sure that all of us at some time or another have deplored the "extremes" of the educational pendulum. I believe the wise, continuing, and systematic use of pilot programs will shorten the arc of the pendulum and hasten the development of educationally sound programs in vocational agriculture.

In my opinion, a third most important reason exists for systematic, continuing state programs for piloting promising innovations. This reason relates to "climate,"--the fear of change and misunderstanding of what we mean when we refer to pilot programs.

I heard an assistant state supervisor in a large state make the statement that there were some new kinds of programs being tried in his region, but he didn't want the head supervisor to know about it until the program succeeded or failed. The implication was that the program would not have been approved for reimbursement. This certainly isn't the kind of climate which would encourage innovation. Perhaps, the real reason that such a climate exists in this state is the fact that no systematic, organized plan exists for conducting pilot programs.

It is normal to resist change, and it is easy to see why people, especially educators, fear change. For as you analyze how we have gone about planning for change, you realize it has been haphazard at its best.

Brickel, in his study of educational change in schools in the state of New York, concluded that "the most formidable block to instructional improvement today is that education unlike medicine, agriculture, and industry fails to distinguish the three phases of change--design, evaluation, and dissemination. Moreover, it fails to support adequately the basic research which should precede the design stage." I subscribe fully to this statement for I know it is true in at least one other state--my own.

State leadership, if it is to make any noticeable contribution to the development of new ideas, must recognize the differences in each of these phases, and, furthermore, they must recognize the part that they can and should play in each phase.

We have discussed some of the "whys" to this point. Before we proceed to the "hows," I think it is best that we define a pilot program. In The Report Of The Second Research Coordinating Conference On Agricultural Occupations, a pilot program was defined as "a planned activity for testing a new idea in a realistic situation."

Since I believe that a pilot program is something more than the testing of a new idea, I am suggesting that for the purpose of unity of thought that you think of a pilot program as a planned activity in the development and adoption of innovation, and further that there are the following four distinct steps in a pilot program.

1. Identifying new ideas and concepts
2. Designing ideas into workable educational programs of action
3. Evaluation through field testing
4. Disseminating ideas which have proven successful

Each of these steps calls for a different set of circumstances, different people, different atmosphere, and different purpose. If each step is to serve its proper purpose, it must be completed before the next step is started, and they must be conducted in the proper order. The responsibility for the proper use of the steps in proper sequence seems to me to be that of state leadership.

I am discussing these steps not because I don't think you are familiar with them, but rather to point out the state leadership responsibility associated with each step. I am sure teacher educators, supervisors, local teachers, and local school administrators feel that given the time and money, they could and should be responsible for each of these steps. But if we are practical, I think we may agree that because of time, money, and the very nature of our organizational structures some of the groups mentioned are better equipped to do the job than others, and some have a greater obligation than others.

In step number one, we identify the ideas which are currently in the minds of people that have implications for educational innovation. Priority should be assigned to those ideas which have particular significance for further development.

The second step involves the process of designing the significant ideas found in step one into a workable plan for action in local schools.

The third step is one of evaluation. Here the plan conceived in step two is tried out where it can be thoroughly tested to determine its educational values. When a new idea has been proven valuable to education, it then is ready for wide dissemination through a fourth step often referred to as demonstration programs.

Each of these four steps are related to each other, but each one is a separate and distinct step that can and should be treated as an individual problem.

Generally speaking, leaders in agricultural education have not recognized the importance of these four steps nor have they recognized that their responsibility varies considerably in each step.

I would like to review briefly with you the unique characteristics of each step, and the procedures which I believe are essential if satisfactory results are to follow.

## Step I--Identifying Ideas for Innovations in Agricultural Education

Teachers, state department personnel, teacher educators, and lay citizens all have ideas for improving vocational agriculture programs. Some of these ideas are known only to the person that has the idea, and others have been disseminated widely through the written and spoken word. Some ideas have limited possibilities for application in a statewide program. Some of these ideas are good and some no doubt would prove undesirable. Some ideas have been tried and found successful. Others have been tried and have been abandoned. In many instances the results of either are known only to a few.

Unless the state supervisory staff provides some means of gathering these ideas, many will never be made known. The state staff needs to develop an atmosphere which encourages free communication of these ideas. They, also, need to provide the structure for the handling and processing of these ideas in order that each idea receives consideration for further development.

To implement Step I, the state board through its staff might well establish the following definite procedures.

1. A procedure should be established for continuous evaluation of present programs in the state as a means of identifying needs.
2. Establish a committee to receive ideas, evaluate ideas, and suggest those for which pilot programs should be developed. This committee should also be responsible for determining what changes have recently been made in their own and other states. The National Center, The U. S. Office of Education, and the American Vocational Association Research Committees should provide this kind of information as a continuing service to the states.
3. Periodic requests should be made of those affected by vocational agriculture programs to submit their suggestions for program improvement (advisory committees, teachers, administrators, and teacher educators).
4. Priorities should be assigned to promising ideas.
5. The necessary structure to move ideas from Step I to Step II should be provided.

As I see it, state leadership has a responsibility at this step for creating a permissive atmosphere regarding change. I believe the reason we have been reluctant to create this atmosphere is because we have feared the indiscriminate, haphazard, and uncontolled change that has characterized so many changes in education. I suggest that if this step and the others that are to follow are conducted in an orderly, systematic manner, we will have no reason to fear change.

## Step II--Designing the Educational Plan

Everyone in agricultural education at one time or another has thought of something which he felt would improve the program with which he worked. Many of these ideas lie dormant because of a lack of time on the part of the inventor to develop the idea to the point that it could be put into action. Others lie dormant because the inventor lacks the understandings necessary to design a sound program.

This step must be conducted by competent people, given the necessary time and the freedom from normal controls, standards, and regulations.

All rules, except those necessary for the protection of health and saftey of students should be suspended for those who are designing innovation.

State Leadership should provide for the following:

1. A project coordinator who will be assigned major responsibility for coordinating the development of a plan to the point where he believes it can be tried out in one or more schools with a better than average chance of succeeding. Free him from other duties.

2. Specialized consultants who will be given time and freedom to test ideas against known factors and basic research.

3. A critical review of the plan by specialists, staff members, school administrators, and others who are qualified by training and experience to make such an appraisal.

4. A plan that includes the following detail:

    a. Objectives of the innovation

    b. A step by step procedure that will be followed in putting the plan into operation

    c. A list of teaching materials and equipment needed

    d. The kind of enrollment appropriate for the program

    e. A procedure for selecting students

    f. The kind of community and school setting needed for the trial stage

    g. The qualities of teachers and/or others who will be in charge of program and training needed

   h. The length of time to complete trial

   i. The evaluation instruments that will be used and who will evaluate

   j. The number and description of control centers where all factors of evaluation are matched with the evaluation centers to the highest degree possible

   k. The time schedule

   l. The number of schools needed for experimental centers

   m. The approximate (extra) cost of conducting the evaluation step and the source of funds

   n. The changes evaluation centers will need to make in their traditional operation

5. Approval of the plan and necessary financing

6. A local project coordinator in each pilot center

Brickel says, "The basic ingredients of a good invention setting are a richness of talent and a freedom to explore. At its best, Step II provides for 1) a group of highly intelligent people, 2) a somewhat limited problem, 3) time to concentrate on a solution, 4) ample money and resources, 5) freedom to try almost anything, 6) the likelihood that the solution will be used somewhere, and 7) the prospect of personal recognition if the problem is solved. The more artificial, enriched and free the setting, the more distinctive the innovation it is likely to produce. Freedom is essential. The atmosphere and the actuality of freedom must be deliberately created."

State leadership has a responsibility here for initiating the structure and organization which can carry out the design step. Few state legislatures would finance this kind of an operation in the state department knowingly and most state staffs are not large enough to free many of their staff at any one time for this kind of an assignment. There are means, however, of providing reimbursement--100% if necessary--to colleges, universities, and local schools for the purpose of getting this job done. It is also possible for the state to contract with private agencies and individuals for certain kinds of consultant services. In addition to the securing of finances, I would think that state leadership has a responsibility for promotion and supervision of these design activities.

## Step III--Evaluation or Testing

This step involves taking the completed plan agreed upon in Step II, and putting it into operation in one or more local schools. The plan is field tested under actual working conditions.

It should be realized that a teacher who is introducing a major change, will need varying amounts of assistance. Evaluation of the innovation should be constant. Immediate evaluation may be found in student reaction. Other subjective and objective means of evaluating progress should also be used extensively.

The special attention the teacher receives during innovation may cause him to overproduce to the extent that the apparent beneficial effects of a given innovation will be due to the added effort on his part rather than from the innovation itself. To insure a more accurate evaluation, it may be necessary to give the teachers of control groups the same kind of special attention.

There are undoubtedly other means of guarding against the "Hawthorne" effect. Persons who are knowledgeable in this area of research should be utilized in designing proper methods of evaluating the innovation while it is being tried under actual field conditions.

Every effort should be made to conduct experimental programs under carefully controlled conditions which permit little deviation from the designed plan. Adequate financing to insure proper teaching materials, facilities, and teacher time for preparation is essential. Since evaluation programs are untried and may deviate considerably from standard procedure, it seems wise not to involve more schools than are necessary for proper evaluation. A limited number of schools, never more than those which can be properly supervised, should be selected at any one time.

State leadership should provide for the following:

1. Adequate evaluation and/or control schools
2. The cooperation of the superintendents and others who will be involved
3. Personnel and materials needed in the evaluation and control centers
4. Financial aid that might be supplied from the state department
5. Appropriate contracts between the schools and the state department which clearly states the responsibilities of the local school which will enable it to receive reimbursement
6. Provision for training the personnel who are to work the project

7. Provision for describing innovation in professional publications

Since field testing is often done for the purpose of comparing one method or one program with another for the purpose of advocating change, it seems locical that state leadership should control this step if possible or at least observe it closely if control is not possible.

Those who have made a study of educational innovation tell us that this step has traditionally been skipped. Too often pilot programs have moved from the design stage to the demonstration stage. We not only have the opportunity to stop this trend: we have the responsibility for reversing it.

Some success factors in this stage might include:

1. Avoid overloading teachers
2. Changes in plans must be avoided after experiment starts to assure reliable evaluation
3. Evaluation procedure should be rigidly followed
4. Visitors who are not directly responsible for the operation of project should be discouraged
5. Reports of progress should be made only to school and state board officials and should not be published until the evaluation is completed
6. Recognize if a program isn't working and stop. (But appreciate the benefits derived from knowing that it won't work and share this knowledge as completely as if it had succeeded)

## Step IV--Demonstrating Field Tested Innovations

The adoption of new ideas is at best a slow process. People seldom try a new practice until they have had an opportunity to observe someone else do it. There are exceptions to this rule, of course, but people who have studied the process of dissemination of new ideas indicate that written or oral reports of innovations bring about adoption at a much slower rate than does observation.

It is also true that people generally are slow to accept new practices unless they are observed in situations similar to their own. The smaller farmer is inclined to believe that new practices on large farms may not be applicable on his farm. School administrators in a small district may follow the same reasoning in rejecting a new practice which is successful in a larger or wealthier district.

The demonstration of new practices takes place only after evaluation has shown, during the evaluation stage, that the practice is educationally sound. Consequently, the purpose of a demonstration in a pilot center is to disseminate the idea or practice as rapidly as possible in as many centers as possible. During the demonstration process, it may be advisable to avoid artificial, enriched, abnormal, or unrealistic settings or conditions. It may also be profitable to reward the demonstration center with recognition and attention.

State Leadership Should Provide for the Following:

1. A written description of the innovation including details necessary for the implementation of the idea or practice
2. A variety of schools to serve as demonstration centers
3. Arrangements for superintendents and other school people to visit successful programs in the original evaluation phase
4. Training for teachers and others, necessary to enable them them to conduct the new plan or procedure
5. The necessary equipment and qualified people
6. The selection of many but varied centers where the innovations may be conducted under normal conditions
7. An evaluation procedure to compare with results obtained during evaluation phase
8. Revision of the state plan to allow for normal financial assistance for programs proven successful in evaluation stage
9. Arrange for as many teachers and administrators as possible to observe demonstration centers
10. Wide publicity, by oral and written word, to explain the accomplishments of the demonstration schools and the value of the innovation to education
11. Arrange for key people to observe the demonstration. Special attention should be given to leaders in the profession and to people who are known to adopt change readily, as well as, leaders of various social cliques
12. Workshops for other teachers in the state to teach the procedures needed in handling the new practices

13. Revision of the pre-service training program

At this stage, state leadership has a major responsibility for "spreading the word" and training teachers. We have a responsibility for telling others about the bad, as well as the good, and we have a responsibility for training beginning, as well as established teachers so that they might carry on the types of programs which have proven to be worthwhile.

In discussing the specific steps in pilot programs and the procedures to be followed in implementing each step, we have suggested many activities for state staff personnel both at the supervisory and teacher education levels.

There are several points I made or alluded to that need to be re-emphasized, however, as they apply to the administration of pilot programs in any given state.

The first one concerns the number of pilot programs which should be under way at any one time. I believe that there should never be any more pilot programs under way (at the evaluation or testing stage) than there are field personnel on the supervisory and teacher education staff. If there are two supervisors and one teacher educator in a state who normally visit local schools for a large portion of their time, then there should not be more than three experimental programs in process. In smaller states where there might only be one supervisor and one teacher educator, I would think that more than one experimental program at any one time would be too many.

When programs have been proven and are at the dissemination stage, I would not be as concerned about the numbers, provided each demonstration center could be visited at least three or four times a year.

Another point that I believe can be defended is that at least one full time person be assigned the responsibility for coordinating, and promoting action research activities at the state level. This person to be in addition to the teacher education personnel who are assigned research duties.

Third, I believe every state plan and/or policy manual should not only provide for research activities of all kinds, but should spell out in some detail the procedures for identifying, designing, evaluating, and demonstrating pilot programs in order that every person engaged in vocational education will be aware of their responsibility for improving the state-wide program through innovation.

If this procedure works for agriculture, medicine, and industry, it is time we bring the same orderly, systematic approach to action research in education.

Fourth, the responsibility for financing pilot programs is primarily that of the state--especially in Steps I, II, and III. The Vocational Education Act of 1963 provided funds for this purpose. I hope that we will make every effort to use it wisely.

Since our purpose in promoting pilot programs is to focus attention on problems of importance to the state-wide program, it is unreasonable to expect that a single school district can be expected to bear more than a minor portion of the expense. The cost of carrying on a pilot program, properly done, is much greater than the traditional on-going program and since it benefits the entire state, it should be the responsibility of the entire state. A local school superintendent often finds it impossible to perform Step III without defending the expenditures through volumes of publicity. This defeats the purpose of the testing stage.

If state funds are supporting the project, less objection may be found locally and interference can be controlled by those who are concerned primarily with the findings of the study rather than the cost per pupil. The local project director and/or teachers may be freed of outside duties without objection from other staff members who may be carrying heavier teaching loads.

Fifth, great care needs to be taken to assure that there be clear-cut distinction between the testing stage and the demonstration or dissemination stage.

In closing let me review with you some key words that clearly describe the characteristics of the four steps in piloting an innovation.

Step I--Identification

Permissiveness,
Persuasion, Coordination

Step II--Design

Intelligent People, Ample Resources,
Ample Time, Freedom From Any Other Assignment,
Limited Problem, Availability of Consultants

Step III--Testing (Evaluation)

Controlled, Closely Observed,
Restricted, Enriched, Diverse Settings

## Step IV--Dissemination

Unenriched, Normal But Diverse Settings,
Carefully Trained Teachers, In-Service Training

I am sure that some of you will disagree with some of the things that I have said, but I am hopeful that we can all agree that vocational education can benefit from the increased use of properly conducted pilot programs, and further that it is the responsibility of state leadership to initiate a major trend in this direction immediately.

# NEBRASKA'S PLAN FOR PILOT PROGRAMS

by

Glen H. Strain
State Director of Agricultural Education
Nebraska

## Past History of Research in Agricultural Education in Nebraska

For many years this area in Nebraska was very limited. This was primarily due to the lack of adequate staffing and inadequate funding. One man was employed on the Teacher Education Staff. His salary was partially reimbursed with State funds. This man, however, due to a multiplicity of responsibilities, was able to spend less than 50% of his time in this area.

In the fall of 1959 this staff member, along with one member of the Supervisory Staff and one instructor, was selected to discuss the needs, values and purposes for research, an effective way to get research planned, conducted and utilized, and the needs for an organizational structure. An interim advisory committee, composed of a representative from each of the eight-instructor districts in the State, was set up to work with the three man committee. This was in the year of 1960.

In the spring of 1963 a "Nebraska Advisory Council for Research in Agricultural Education" was set up. Dr. James Horner, on the Teacher Education Staff, was selected as coordinator. Personnel on the council includes sixteen active members and seven ex-officio members.

A. Active members include the following:

1. Four teachers of agriculture
2. Four county agents
3. One farmer
4. One off-farm agriculturist
5. One on-farm, non-farming agriculturist
6. One farmer organization representative
7. One school administrator
8. One Vocational Division representative, Agricultural Education Department, University of Nebraska
9. One State Department of Education representative
10. One State Extension Staff member

B. Ex-officio members include:

1. The Director of the Agricultural Experiment Station
2. State Director of Agriculture
3. Director of Agricultural Education, State Department of Education
4. Commissioner of Education
5. Chairman of the Agricultural Education Department, University of Nebraska

6. Director of the Cooperative Extension Service
7. Director of Resident Instruction

Although this council has been in operation a relatively short time, it does show considerable promise of helping move forward research in agricultural education.

With the passage of the 1963 Vocational Education Act and the possibility of special funds for research, an evaluation was made. In the spring of 1964, Dr. Howard Deems, Chairman of the University Agricultural Education Department, called a meeting of the Assistant Commissioner of Education in charge of Vocational Education, and the State Director of Agricultural Education. It was mutually agreed that another person for research should be hired as a member of the Teacher Education Staff, with the State again reimbursing part of his salary. Dr. John Coster, from Purdue, and a member of the Indiana Staff, was the man we chose. Fortunately for Nebraska, Dr. Coster was interested and became a member of our Staff on July 1, 1964.

## Development of Nebraska's Plan for Pilot Programs

The Central Region Research Conference in August, 1964, at Columbia, Missouri, provided the challenge and impetus needed for our staffs to start the ball rolling.

A meeting was called for the staff members present at the conference. It was agreed that one thing about which we knew very little was the new area of off-farm agricultural occupations. Questions such as the following were asked:

A. Is any instruction in Vocational Agriculture essential to initiate entry into agricultural occupations other than farming?

B. Won't our present Vocational Agriculture program take care of this?

C. How much on-the-job experience should students in this area have?

D. Should a general related class be given to these students as well as on-the-job experience?

As the discussion proceeded, it was quite obvious we needed something to help answer some of these questions. A pilot program was suggested. Dr. Coster said he had given this some thought and presented those in attendance an idea of what he had in mind. Everyone agreed that Dr. Coster and Dr. Horner should proceed.

Several staff meetings were held which again included the Assistant Commissioner of Education in charge of Vocational Education. The purpose was to keep all informed of the process and progress.

## Birth of Nebraska Project No. 1

Project Title: "An Experimental Evaluation of Approaches to Preparing High School Students for Agricultural Occupations Other Than Farming." This was submitted to the U. S. Commissioner of Education under the Provisions of Section 4(c) of the Vocational Education Act of 1963.
Applicant: University of Nebraska
Initiated By: John K. Coster, Professor and Director of Research, and Howard W. Deems, Professor and Chairman, Department of Agricultural Education, College of Agriculture and Home Economics, University of Nebraska, Lincoln, Nebraska.

Principal Investigators: John K. Coster
James T. Horner
Duane E. Loewenstein
Douglas D. Sjogren
Glen H. Strain

Submitted By: H. H. Kramer, Director, Agricultural Experiment Station, College of Agriculture and Home Economics, University of Nebraska, Lincoln, Nebraska.

| Federal Funds Requested: | |
|---|---|
| | $12,780 for fiscal 1965 |
| | $38,000 for fiscal 1966 |
| | $290,000 for eight years |

Duration: Beginning 1 January, 1965
Ending December, 1972

Date Transmitted: 5 November, 1964

## The Problem

The central problem of this study is to evaluate the effects of selected treatment and classification factors and indicated interactions on the preparation of high school students for initial entry into agricultural occupations other than farming, as measured by dependent variables. The central problem is elaborated into the following parts:

A. To compare three "Pilot" programs for preparing high school students for initial entry into agricultural occupations other than farming with a "Control" group, with all four groups to be incorporated into an experimental design, with an internal source of experimental error.

B. To determine the optimum number of years of instruction in Vocational Agriculture appropriate for high school students who desire to prepare for initial entry into agricultural occupations other than farming.

C. To examine the relative effectiveness of two patterns of curriculum organization in Vocational Agriculture courses.

D. To investigate the effects of classification factors pertaining to high school students on the dependent variables, and to study the interactions of classification factors by treatment factors.

## The Objectives of the Study

The principal objective of the study is to obtain answers to the three questions posed by the theoretical construct of the study:

A. Is instruction in Vocational Agriculture essential to initial entry into agricultural occupations other than farming?

B. Is a practical, on-the-job, institution directed work experience program essential to initial entry into agricultural occupations other than farming?

C. Is a course in Related Instruction essential to initial entry into agricultural occupations other than farming?

## Memorandum of Agreement

To bring out more information on the project, I am hereby including a Memorandum of Agreement which was sent to all schools who had indicated an interest and then were drawn at random to participate.

Department of Agricultural Education
Agricultural Experiment Station
College of Agriculture and Home Economics
University of Nebraska
Lincoln, Nebraska

## MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into between the

(local school)

which hereinafter shall be designated as the Party of the First Part; and the Department of Agricultural Education, Agricultural Experiment Station, College of Agriculture and Home Economics, University of Nebraska, Lincoln, Nebraska, which hereinafter shall be designated as the Party of the Second Part.

THE PARTY OF THE SECOND PART hereby agrees to provide to the Party of the First Part the following services, materials and reimbursements:

1. To provide not less than thirty (30) days of training to the Vocational Agriculture teacher designated by the Party of the First Part, during the summer of 1965, with twenty days to start on or about 14 June 1965 and end on or about July 1965, and with an additional ten days of training to be arranged with the cooperating teachers, to be offered subsequent to 9 July 1965, said training to be offered by the Department of Agricultural Education, College of Agriculture and Home Economics, University of Nebraska, Lincoln, Nebraska.

2. To provide reimbursement to teachers for subsistence while in training and while attending workshops called by the Project Directors at a rate not to exceed $8.75 per day, and to provide reimbursement for travel from the school city to Lincoln, Nebraska for not more than six round trips while in training in the summer of 1965, and for travel for workshops at a standard rate of seven (7) cents per mile. (It is stipulated that teachers may receive graduate credit for training, provided that the teacher pays the cost of tuition at the standard rate of $11.00 per semester hour. Teachers may register for six hours of credit during the summer of 1965, and for two additional semester hours at their convenience as a problems course, for a possible total of eight semester hours of credit.)

(Memorandum of Agreement Continued)

3. To provide instructional materials for the Related Instruction Course and for the Directed On-the-Job Work Experience Course.

4. To provide the necessary standardized tests and instruments constructed as part of the project for the conduct of the measurements and evaluation phases of the program and to provide results of tests to the school.

5. To provide in-service instruction and assistance for the operation of the project, regardless of the instructional program assigned randomly to the school.

6. To direct and supervise the follow-up phase of the study and to provide results to the school.

7. To reimburse the teacher for professional services rendered to the project, specifically for keeping records and conducting follow-up studies at an honorarium rate of $5.00 per hour, and to reimburse the teacher for subsistence and travel incurred in fulfillment of the project.

8. To provide a copy of all progress reports and the final report to the school.

9. To continue the research and instructional program for three complete school years, and to continue the total program, including follow-up, for four years, until 30 June 1969, providing that the contract between the Office of Education, U. S. Department of Health, Education and Welfare and the Board of Regents of the University of Nebraska continues until completion of the proposal submitted by the Agricultural Experiment Station of the University of Nebraska, and approved by the U. S. Commissioner of Education remains in force. A copy of the proposal and amendment is attached to the original copy of the Memorandum.

THE PARTY OF THE FIRST PART hereby agrees:

1. That the teacher of Vocational Agriculture designated by the Party of the First Part will pursue the thirty day training program during the summer of 1965 as outlined by the Project Directors.

2. To accept and put into force any one of the following four treatments which is to be assigned randomly to the school at the termination of the first twenty days of training, the assignment to be made on or about 9 July 1965:

(Memorandum of Agreement Continued)

I. Instruction in Vocational Agriculture only (six schools).

II. Instruction in Vocational Agriculture plus the Related Instruction Course to be offered to Seniors. The Related Instruction Course is to consist of approximately 90 hours of General Related Instruction, and approximately 90 hours of Special Related Instruction (six schools).

III. Instruction in Vocational Agriculture plus one year of Directed On-the-Job Work Experience in an agricultural occupation at a station to be designated by the School, to be offered during the Senior year (six schools).

IV. Instruction in Vocational Agriculture plus the Related Instruction Course plus the Directed On-the-Job Work Experience Program to be offered during the Senior year.

3. To follow one of the two plans of curriculum emphasis as follows:

   A. All new Vocational Agriculture programs, and eight existing vocational programs selected randomly will organize curriculum content around biological, chemical, physical, economic, and mechanical principles underlying agriculture. (Instruction in principles will be offered to all teachers during the summer of 1965.)

   B. Eight existing schools, selected randomly, will organize curricula content around the problems of agricultural workers.

4. To participate in the measurement and evaluation program.

5. That the teacher shall participate in the follow-up studies of program graduates.

6. To continue the instructional program for three school years (1965 to 1968) and the follow-up program until 1969.

It is understood that the plan of reimbursement for instructional costs and for equipment will be entered as a matter of contract and/or agreement between the school corporation and the State Board for Vocational Education.

In witness thereto, the representatives of the Party of the First Part and the Party of the Second Part have accepted the provision of this Memorandum of Agreement, and have thereupon indicated acceptance by their signatures:

FOR THE PARTY OF THE FIRST PART:

Date
(President) (Secretary) Board
of Education

Date
Superintendent of Schools

Date
Principal of High School

FOR THE PARTY OF THE SECOND PART:

Date
Director, Agricultural Experiment
Station College of Agriculture
and Home Economics, University
of Nebraska

Date
Chairman, Department of Agricultural
Education, University of Nebraska

Date
Project Director

APPROVED Date
Director of Agricultural Education
State Board for Vocational Education
State of Nebraska

Reimbursement

To help induce the needed eight new departments in the pilot, the State Board of Vocational Education has agreed to the following reimbursement for three years:

A. 50% of instructor's vocational salary.

B. 50% of local travel for supervision.

C. 50% for equipment.

D. 50% for textbooks, reference books, and agricultural bulletins.

E. 50% for maintenance and repair of all equipment costing $100 or more in which the U. S. Government has 50% interest.

In contacting these schools, Dr. Coster and one member of the Supervisory Staff cooperatively worked together as a very effective team in making personal visits.

Factors for Success

In analyzing the success to date in this project, it would appear some of the following have been important contributing factors:

A. Cooperation

Much credit has to be given to Dr. Coster for the excellent manner in which he has involved both the teacher training staff, the State Supervisory Staff, and the Assistant Commissioner of Education in charge of Vocational Education. At every step, he has kept everyone mentioned above completely informed, even though the project is being funded through 4(c) funds. In so doing, all of us have been enthusiastic and have talked the project at every opportunity. This enthusiasm has carried over to the schools and instructors. Perhaps partially as a result of this, many more schools applied for participation than the project was set up to handle.

B. One man, Dr. Coster, was given the major responsibility to proceed, and with it the understanding of having time to do the job and the assured cooperation of schools, instructors and the State Staffs.

C. Everyone assisted in helping out where possible, but again, without question, the success of the project primarily has been due to the capability of Dr. Coster and the leadership which he has exerted.

## Project No. 2 Approved

One of the most pertinent and pressing problems confronting the State Board for Vocational Education in Nebraska is that of collecting, analyzing, synthesizing, interpreting, and translating into programs of Vocational and Technical Education and occupational preparation of less than college grade, the necessary data and information, from which plans may be made and programs developed at state and local levels, for developing programs of Vocational and Technical Education in the schools of Nebraska. Requests for assistance from local schools in program planning and curriculum development, with emphasis on translating occupational trends, projected needs for initial entry into the labor force, and the projected composition of the labor force into programs of Vocational and Technical Education and occupational preparation, are accelerating at a rapid pace.

Further, seminars and meetings of school administrators held during the past year in Nebraska to discuss Vocational and Technical Education in general, and the provisions and potentialities of the Vocational Education Act of 1963 in particular, have generated and evidenced widespread interest in developing and expanding programs of Vocational and Technical Education in the public schools of Nebraska. A breakthrough to provide more adequate programs of Vocational and Technical Education among the schools of Nebraska, especially in the rural areas, is imminent. It is imperative that the generated interest in and concern for these programs be accompanied--or, better still, preceded--by a program of research coordination, information processing, and interpretation, which will impact upon and relate to decision-making processes by which programs of Vocational and Technical Education and occupational preparation are developed at the State and local levels.

Faced with the above problem a project entitled, "The Establishment and Development of a Research and Coordination Unit in the Area of Occupational Needs, Research and Coordination in Nebraska," is under way.

Fortunately, it was possible to acquire a young man with former experience in school administration and the Manpower Training Program, and who has recently completed his doctor's dissertation entitled, "A Program to Determine Educational Needs in the Field of Vocational Education in Local School Districts," to be coordinator of this project.

The project is again being funded under 4(c) at a cost of $99,830.

## In Conclusion:

We do feel pilot programs are necessary for testing a new idea in a realistic field situation.

We do anticipate developing pilot programs in program areas other than off-farm agricultural occupations where the problem and need is recognized. At the present time, we do have a much less sophisticated pilot program in progress entitled, "Establishing Local Young Farmer Opportunity Committees."

We do envision pilot programs as a continuing part of a State program, and not necessarily an occasional activity.

Most of our present pilot programs are now funded under 4(c), but the less comprehensive and less sophisticated ones have been funded under regular Vocational funds or by Ak-sar-ben, which is an Agriculture Society in Omaha.

We have experienced considerable beneficial side effects, I believe in all cases, when pilot programs have been launched...side effects such as outside interest in the program, revived interest and enthusiasm within the program and considerable educational growth in carrying out the projects.

Finally, and possibly the most important area again is the employment of well educated research personnel who have interest in operative research as well as basic research, and who have a free hand to proceed with assured cooperation and the possibility of sufficient funds.

# EVALUATION OF PILOT PROGRAMS

by

G. L. O'Kelley, Jr.
Professor of Agricultural Education
University of Georgia

During the past few years the number of so-called pilot programs in the field of vocational education has been increasing by leaps and bounds. One does not have to qualify as a seer to predict a continuation--in fact, even rapid acceleration of this trend during the next few years. The cause for the apparent popularity of such programs may be attributed to two factors. They are:

1. In order to keep pace with a constantly changing technology, vocational education program planners have increasingly been forced to project new ways (or programs) of meeting emerging demands. The desirability, wherever possible, of trying out these program innovations via pilot installations rather than in area-wide adoptions is obvious and requires no justification. On the contrary, educators who conduct them deserve our commendation for their professional concern and integrity.

2. The provisions of the 1963 Vocational Education Act places even greater emphasis than ever before on pilot-type programs. In addition, it makes financial support available at the state level by removing certain budgetary restrictions and at the national level through the medium of direct grants. Inevitably the prospect of federal grants always excites the interest of school administrators, and I predict a rash of pilot programs to break out in the field of vocational education in the coming months.

Pilot programs undoubtedly have a role to play in our scheme of things and the findings of such programs, if properly authenticated and presented in readable form, have a contribution to make to our professional storehouse of knowledge. Pilot programs serve a useful function in the field of vocational education at both local and national levels. The value locally of a pilot program is immediately one of utility--it brings to bear via the elements of action research a collective intelligence on the solution of an existing problem. Far outweighing this return, however, is the contribution which may be made to the state, region or national levels if it is possible to generalize from the pilot situation to a much broader theater of operation. One good pilot program could make it possible to avoid scores of failures elsewhere or result in scores of people saving a year or more of valuable time duplicating the same procedure to learn the same thing.

Whether such generalizations are possible rests entirely with those who decide how the pilot program shall be conducted and evaluated and how the findings of same shall be reported.

Pilot programs improperly conducted and carelessly or erroneously reported can do irreparable harm to the profession as well as to the public. Just because a particular program is outstandingly successful in one situation is no guarantee it will, or will not, succeed in another situation (or even in the same situation if repeated) if the original success was due to the brilliance and persistance of a great teacher and not to any peculiar features of the program itself. Such a teacher might well have come up with equally outstanding results using a totally different approach. The teacher and not the procedure made the reported difference, but if the project report failed to bring this variable into focus, you and I could be sadly disappointed in our own attempts to obtain equally satisfactory results with a similar procedure.

Pilot programs which are less than spectacularly successful in terms of the intended outcome may yet be of inestimable service to the profession if the project is properly evaluated and reported. When the conditions under which the program was operated are carefully reported and the degree of success or failure reported by specific areas in understandable terms, a careful reader may quickly identify promising alternatives and thereby avoid unnecessary mistakes in his own project. For instance, a report may show that students failed to reach the established objective during the instructional period, but that they nevertheless made continuous progress from beginning to end. A thoughtful reader will begin immediately to ponder the merits of a longer instructional period in his own project.

This leads us to the inevitable question--what constitutes a true pilot program? Most of us have our own answer to this, but even so, I wish to comment on my own point of view, as any further observations which I shall make will be predicated upon this point of departure. Actually, it may be simpler to spell out what is not a component of a worthwhile pilot program and then examine what remains.

No matter how helpful such a designation may have for a particular situation just to so entitle any innovation which a teacher or administrator may consider feasible in order to circumvent some existing policy or standard does not make that effort into a pilot program. This type of practice remains an expedient move no matter what it is called, and even though justifiable to those immediately concerned, it should be accepted at its face value and, in most instances, promptly forgotten for purposes of program improvement.

Neither is an elaborate experiment in which the performance of X group compared with the performance of Y group with certain treatment carefully administered and certain variables rigidly controlled to be considered as a pilot program. This is a research project and it undoubtedly, if properly designed and conducted, will contribute much to the cause of education. It may even lay the groundwork for a subsequent pilot program, but within itself it is not a pilot program. It is an experimental research project.

Then what is a pilot program? A true pilot program is a procedure which is carefully and painstakingly projected in keeping with solid research findings or else predicated on thorough philosophical reflection. Through either channel a new, and hopefully, better way of conducting a program is projected for trial under realistic conditions. Educators who are convinced the innovation is superior--either overall or in some of its features--but being unwilling to commit an entire system to the resulting change without first ruling out every obvious chance of failure will resort to a carefully conducted and observed pilot program to validate the proposal. A pilot program then supplies the equivalent of the "tested through action" step of the reflective thought process. Theoretically, all evidence available supports the proposal, but until the empirical evidence is in hand the proposal lacks that final endorsement. Armed with the empirical evidence the educator is willing to generalize to greater and more costly ventures.

The purpose of a true pilot program, then, is to validate under normal conditions a proposed program innovation. To the extent the conditions surrounding the pilot are normal and the evaluation complete and comprehensive other educators will feel free to construct programs along similar lines when they have studied and interpreted the reported findings.

Why evaluate a pilot program? In the light of the previous discussion, the need for stringent evaluation of any pilot program is twofold: (1) to determine the merits of the procedure in terms of the local situation together with implication for same, and (2) to provide a basis whereby other educators may profit from the same tryout without duplicating the costly expenditure of money and time. The ultimate purpose of all action research is program improvement and, of course, this is equally true of all evaluative effort. If we had time, I think we would be forced to conclude that evaluation and action research are very, very closely related. We in agricultural education have still another restraint affecting us as we discuss the need for evaluating pilot programs. We are operating under an injunction of the AVA that no funds be approved for pilot programs without prior approval of plans for the careful evaluation of the program and its outcomes. There seems to be no basis for doubting the intent of U. S. O. E. to lend their support to such restraint.

Evaluation, then, should and apparently will have serious meaning to all of us who are interested in pilot programs during the next few years. Educators seem to enjoy discussions involving semantics, and, as a result, educational terminology has different shades of meaning for different individuals and even for entire groups. In my own institution we "evaluate" student applications, student progress, programs in the department, college or university. We even "evaluate" facilities, books, ideas, ourselves and unfortunately our associates.

Webster defines to evaluate as "to set down or express the mathematical value of; to express numerically" or "to examine and judge concerning the worth, quality, significance, amount, degree or condition of." Obviously the terms mathematical value, numerical expression, amount, degree, etc., imply some degree of exactness or at least understandable terms of measurement.

Educators assign various shades of meaning to the term ranging from an exact value to a vague summation. In 1950 Harold Shane reported a study involving 200 educators which revealed no less than five clear-cut concepts with regard to the meaning of the term evaluation. They are listed as:

1. Application of a value to a problem (textbook ratings)
2. Synonym of measurement (test scores)
3. Label for a process (rating teacher competency)
4. Appraisal of curricular practices and resources
5. Study of change--(pupil behavior)

Apparently these range along a scale or are continuous all the way from casual opinion to scientific measurement. The "application of values" concept appears to characterize the more elementary approaches while the "study of change" concept has many of the elements of meaning associated with the more sophisticated approaches to evaluation as we know it.

Tyler defines evaluation as "a process by which the values of an enterprise are ascertained." Certainly I cannot afford to disagree with such an authority, but for purposes of discussion I question whether "values are ascertained" or just "agreed upon," if ascertain means "to find out with certainty" as Webster defines it. My old friend and teacher, J. E. Greene, defines it as "process of securing value judgments concerning a condition or process." I like the identification of the action word "process" and especially the terminology "securing value judgments." I also used to like to hear him emphasize his belief that value judgments were based on a consideration of the best "evidences" available--whatever they might be. Some may be scientifically exact and some rather inexact but expressive.

It appears that in many efforts which are labeled as evaluation there seems to be considerable difficulty encountered in arriving at a systematic measurement of the characteristic studied. Many times a respected and experienced judge can assign a value which for all practical purposes has meaning and usefulness in affecting judgment. After all, improvement of the condition is the ultimate goal of all evaluation. For this and other reasons I like the definition, "the process of securing value judgments concerning a condition or process" even though I can claim no authorship rights. I do insist that such judgments are based on the best evidences, and this evidence may vary from an opinion to exact scientific measures. Evaluation when considered as a process and not as a fixed point or value permits one to concentrate on procedure rather than becoming bogged down in the minutia of specific measurement. Vocational education leaders have always been too concerned with action to become concerned with laboratory detail--at times regretfully so. So I offer no apology for my wish now to discuss evaluation in terms of procedure.

Many, many so-called principles of evaluation have been advanced and debated over the years. Many have merit, but I shall not belabor you with the merits of more than the three which to me seem germane to this discussion. These are:

1. Effective evaluations are continuous and not of a specific moment only.

2. Effective evaluations are made in terms of specific goals or objectives.

3. Effective (complete) evaluations must involve the actual participation of the person(s) or organization(s) concerned in the process.

I should like to discuss these three briefly as I see them affecting our pilot program discussion.

Effective evaluations are continuous.

This is just another way of saying the evaluation process is concerned with measuring or making judgments regarding the change which has occurred from one point in time to another and not in identifying a static point. To know that at a given moment a youngster's weight is 122 pounds and his vision 20/40 is highly interesting, useful and usable information. We need more such exact measurement; but unless these measures can be associated with some process on condition they will remain just that--measures to serve as a basis for comparison with some norm, etc. Now, to know that six months ago before a diet and corrective lenses were prescribed, the youth weighed 98 pounds and his vision was 20/200 is to be in position to place a value judgment on the treatment he has undergone. To know that in 1960 the mean verbal CEEB score for an institution's entering freshman class was 425 while in 1965 it was 465 is to be in position to place a value judgment on the admissions program of that institution. Whether the change was the result of changes in the admissions program or in high school study programs or because of some other factor, is a suitable topic for careful research. But the process of determining that the change did occur is illustrative of the evaluative process while to determine course relationships is a research function.

If we hope to make worthwhile results available regarding pilot programs, we are going to have to establish bench marks at the beginning of the program against which to measure changes occurring during operation of the program. With a beginning point and a terminal point established and sometimes with interval measures along the way, we can make judgments regarding the effectiveness of the program. Furthermore, if I use some sort of standardized measures, or at least clearly understood terms and procedures in my program and the report I write up on it, you can evaluate the same program in terms of your own situation. But if I tell you the average score on a certain aptitude test of a group of students' competency in my pilot program in welding instruction is 98 and fail to tell you that the average initial score at the beginning of the instructional period was 97, I probably have succeeded in completely misleading you regarding the effectiveness of the instruction. Knowing the initial and terminal scores and other factors being equal, you will merely dismiss the matter from further consideration.

My only reason for this emphasis of such a simple point stems from the number of requests I have heard from others for assistance in the evaluation of a program that is in its final stages of completion or worse--already completed. Plans for evaluation of a pilot program should begin when the program is being proposed and not when it is already under way and certainly not after it has been completed. Unfortunately, the preoccupation of vocational agriculture leaders with action quite often causes them to overlook the need for much spade-work with pilot programs long before the kickoff time.

Effective evaluation must be made in terms of specific goals or objectives.

It is always interesting to learn of serendipitous outcomes of any educational program, but if the outcome is entirely outside the projected area of service of the planned program, one who is interested only in the anticipated outcome does not assign a high judgment value to the program being evaluated on the basis of that particular measure. In other words, if a school spends thousands of dollars establishing a program to train typists, then responsible teachers want to know how well the graduates perform as typists. The fact the graduates are better telegraph operators than those lacking such experience is interesting information but sheds no light on the merits of the program in terms of its stated objective--to train typists.

This principle also is simple in terms of its face value. In reality, however, educators in general and vocational educators in particular, are often accused of extreme laxity when it comes to projecting clearly defined and realistically attainable goals or objectives. We like to deal in vague ambiguities such as training for "leadership" or "cultural appreciation," etc. Stating clearly that the program proposes to prepare students who can type 55 words a minute with no "strikeovers" sounds mercenary to some. But to the everlasting credit of the plodders among us who view educational objectives in such concrete terms, we must admit it is relatively simple for such educators to determine when they have accomplished what they set out to do. Even though they agree with their more vocal colleagues regarding the virtues of "love of God, mother and country," they are able to conceptualize the job before them in terms of specific goals to be sought and achieved. Like the true politician they hopefully visualize an ideal, but they realistically seek the attainable.

In these pilot programs even before plans take preliminary shape we must agree upon the specific goals we seek, and if humanly possible, spell them out in terms which are subject to some type of measurement.

One side observation, at this point, could be that we in vocational education could well afford to solicit the counsel and assistance of our colleagues from other disciplines in establishing objectives for our pilot programs. Although we will probably insist on retaining a position of prominence for the attainment of competencies which have labor market value, they might lead us to see other reasonably attainable goals which would make our students even more productive and adaptable individuals in a complex society. Unquestionably some of our friends in the fields of tests and measurement or in programmed instruction could help us sharpen our own objectives in terms of suitability for measurement, etc., for evaluative purposes. If we persist in projecting vague generalities in lieu of clearly defined objectives, no one will be able to evaluate progress made toward their attainment. Unfortunately the old vocational agriculture objective of training farmers and prospective farmers for proficiency in farming came back to haunt many teachers who really were trying to train for non-farm agricultural occupations.

Complete evaluation must involve the actual participation of the person or institution concerned in the process.

Not all of us take kindly to this idea, either conscientiously or otherwise. Of course a completely disinterested third party can make value judgments regarding the attainment of some goals, but, on the other hand, if the student or teacher involved wishes to prejudice the observer's judgment one way or the other, he will usually be able to do so.

More important than this is the importance of those desirable changes which occur "inside" the student and which may not be readily discernable or objectively measurable. Such things as confidence in one's ability to perform at the level at which he has been taught, pride of accomplishment, feelings of resentment, regret or antagonism are important outcomes but evidence regarding them are not subject to quick and ready measurement. Evaluation is not a process of obscuring or glossing over outcomes but of collecting, identifying and measuring all sorts of evidence which will depict the attainment or lack of attainment of an objective.

Extreme caution should be exercised in collecting subjective evidences of progress from persons who are themselves involved in a pilot program, but such evidences are indeed important. After all, much useful evidence is inexact, but if it helps to fill out a true picture, it is needed. In the final analysis, the person who analyzes the evidence and makes the final interpretation of the worth of the pilot program must assign relative weights or values to the various piece of evidence. It should be unnecessary to point out that the person who makes the final interpretation regarding the true meaning of all the evidence collected may be the person in charge of the pilot program, or it may be you or me, hundreds of miles away but trying to find leads to project a similar program with a reasonable chance for success.

With this background understanding as a frame of reference, perhaps we can proceed to the crux of the problem as it confronts most of this group as practitioners in the field. That crux is the procedure utilized in effective evaluation. Procedures utilized will determine the worth of the evaluative effort. Faulty procedures can only result in faulty evaluations. Assuming a good pilot program has been planned, the three major procedual steps in planning for the evaluation of that program must be:

1. Spelling out program goals or objectives

2. Collecting evidence concerning the process

3. Interpreting the evidences in terms of the objectives sought

If these steps are adequately taken, it should be possible to place a value on the process--in this instance the pilot program. I should like to discuss the steps in some detail.

### Spelling out program goals or objectives.

I suspect the most difficult, if not the most critical, of the three steps will be the establishment of program objectives. I doubt if many of us have ever done this realistically with regard to the overall program of vocational education in agriculture. Some program innovations I have known about have merely been done for the sake of convenience, or to humor personal eccentricities. No one ever really took the time and the trouble to spell out just exactly what was proposed to be accomplished from an educational point of view. A few years ago I heard a teacher boast of the number of shipyard welders which he had turned out in his vocational agriculture mechanics program. He actually seemed offended when someone asked if the objective of his programs was to train shipyard welders. Although there is nothing whatsoever wrong in a boy's deciding to become a welder, the success of a program, which at that time was supposed to train farmers but which wound up training shipyard welders, must be questioned with regard to its effectiveness.

As important as the establishment of attainable objectives may be, the matter of stating these goals in terms which permit reasonable measures of accomplishment is equally important. To state that one's objective is to turn out students of "high moral standards" is to doom to failure from the beginning any effort to evaluate with any reasonable degree of objectivity the effectiveness of the program in terms of the accomplishment of stated objectives. To state that one is planning to graduate skilled welders is a bit better. To state that one is planning to graduate skilled arc welders is somewhat more specific, but to plan to graduate skilled arc welders capable of performing at the minimum level acceptable for the apprentice program of the local trade association is not only to have a clearly defined objective but also an objective, the attainment of which may be readily measured.

I propose that if we are going to set up pilot programs in vocational agriculture to train off-farm agricultural workers we need to study much and confer long with employers and others with regard to the specific objectives (training competencies) which we are striving to accomplish. If the boy will be required to calculate feeding rations on his job we will want to state a clear cut objective: "the ability to calculate balanced feed ration for hogs, cattle and poultry." Even the student will know when this objective is reached. But if we want to make evaluation impossible let's set up the objectives to read, "advanced knowledge of livestock and poultry feeding practices." Let's strive for more clear cut specificity and less of the impressive double talk when we plan the objectives of our pilot programs.

While we are on this subject, I wish to call your attention to the repeated usage in the 1963 Vocational Education Act of the term, "training for gainful employment." I propose for your consideration the suggestion that most of the objectives of our pilot program should reflect those attainable levels of competency or degrees of mastery associated with entry level employment for a given occupation. We will do well to concern ourselves with the identification of those competencies which a prospective agri-business employee must possess if we are trying to plan a program to train such candidates for employment. Further, when we write up those objectives we should try to state them in terms and levels subject to measurement if we expect to be able to evaluate the outcome of the undertaking.

## Securing evidence regarding the condition or process being studied.

This step is the most time demanding of all. Having established clear cut, measurable objectives, we must find or construct instruments or techniques for gathering evidence which depicts the degree at which the goal has been achieved. If the swimming coach sets as his objective that every student will be able to swim 50 yards backstroke in 35 seconds, then he must provide a 50-yard course, starters, and a timing device, along with a test schedule which will permit all students to measure their progress. At the end of the course, if 20 out of the 20 students reach the standard his objective has been achieved; if two fail his objective has not been achieved, but if only 10 reach the standard, his program has been even less successful with regard to that particular objective. Please note the qualification--with regard to that particular objective. He may have had other and more important goals which were reached but we would want measures or evidences regarding the progress toward the attainment of each specific objective. But in either instance he must have at his disposal devices and procedures whereby evidence necessary to measure accomplishments or progress toward the achievement of the established goal may be gathered.

The type of evidence required or desired in a given situation will be dependent upon both the situation and the stated objective. It is needless to say that the effective application of evidence-gathering devices used is also dependent upon the competency of the evaluator or those assisting him. Sophisticated measuring devices in the hands of unskilled persons may not only be wasteful but actually potentially dangerous. Some types of evidence suitable for evaluative procedures are:

1. Observational data
2. Interview data
3. Anecdotal records, etc.
4. Data of quantity, quality
5. Objective test scores
6. Indexes of traits, characteristics, etc.
7. Rating scales
8. Historical records
9. Case studies
10. Progress charts

It will be necessary to report here that techniques appropriate to the kind of evidence sought will vary with the skill of the evaluator, the objective being measured and the total environment.

The matter of kinds of evidence to seek and the kinds of devices to utilize constitutes a very expansive and formidable area in which most of us in vocational agriculture would do well to try to obtain all the help available from our colleagues who are specializing in these fields of endeavor. The evaluation might be greatly improved if these people can be induced to help us, and in the end program improvement would be much more quickly realized.

Objective data or evidence has many advantages, but let us not dismiss too quickly the value of certain subjective evidence in evaluation programs. After all, subjective judgments are just as good as the person making the judgment. In some instances this is not only as good as you can obtain under the circumstances, but it may be just as good as you could use. The judgment of competent panels of juries can be used very, very effectively in evaluating pilot programs. This is especially true when the subjective judgments are interlaced with and corroborated by objective measurements. When subjective judgments are considered to be desirable, every effort should be made to obtain unbiased judgments.

With regard to the use of questionnaires, interviews, rating scales, much has been written in the way of suggestions regarding procedures. While we are engaged in writing up budgets for the pilot program, we shouldn't overlook the possibility of adding a few dollars here and there for consultative services in order to get the assistance of trained assistants in these specialized areas.

### Making a final judgment in light of all the evidence studied in an effort to determine the degree to which the objectives sought have been attained.

Of course this judgment is the finished product which the evaluator set out to find in the beginning--an answer to the initial question as to whether the program accomplished what it was designed to accomplish. This step involves analysis, interpretation, weighing of values and long and ardorous reflection. Statistical analysis to give meaning to the data may be necessary. The skillful evaluator will do everything necessary including the utilization of any assistance he can get in the critical task of relating the evidence found to the goals originally established. If the two previous steps in the procedure have been well done, the picture should begin to emerge--maybe not the picture hoped for, but nevertheless one which makes it possible for educators to accept or reject the pilot program as a directive of a new and better program.

May I review the principles discussed? They are:

1. Effective evaluations are continuous and not of the specific moment.

2. Effective evaluations are made in terms of specific goals or objectives.

3. Effective (complete) evaluations must involve the actual participation of the person or organization concerned in the process.

And the three procedural steps discussed are:

1. Spelling out program goals in objectives.

2. Collecting evidence concerning the process.

3. Interpreting the evidences in terms of the objectives sought.

And now just a word about the report of the evaluation. A report there must be if the evaluation effort is to contribute to the original aim--the improvement of the program itself. Pilot program leaders owe it to themselves, their associates, and the profession to record for future study the details of the program as planned and operated as well as the findings of the evaluation effort. Whether the program proves to be highly successful or a dismal failure, a clear and unbiased account should be reported. It is the report which will assist other curriculum leaders who are struggling to improve programs of their own.

In reporting on pilot programs, educators are obligated to report as completely and accurately as possible all details of the program related to the setting and the established goals or objectives. The outcomes or evidences gathered by the evaluator should be reported in detail with any needed interpretations. It is not necessary for the report to deal with generalizations regarding the probability of similar outcomes being encountered in other situations. If the facts are clearly and succinctly reported, the task of relating them to other situations should and rightfully will fall on other shoulders. As someone has written, "so long as a doctor or a mechanic or a teacher deals with the diagnosis and treatment of a single case,they are acting as specialists, but when they begin to generalize with reference to the likelihood of obtaining similar responses in other situations they have projected themselves into the role of the researcher." I suspect most evaluators are more concerned with doing a good job at hand than in telling others what the solution is to their problems. On the other hand, if they leave a clear account of their labors and accomplishments, others may make valuable usage of them.

It occurs to me that I may have passed lightly over the obligations of a conscientious evaluator. He is obligated to at least form groups. They are:

1. The students involved in the program.
2. The local school and community.
3. The institution (state, region or nation) sponsoring the project.
4. The profession.

Perhaps I have dealt sufficiently with the latter two, but the first two merit consideration also. The immediate concern of the local school is to conduct the best program possible for its patrons. The major concern of the students enrolled in the program is to obtain an education. Let us hope none of us ever become so absorbed in the details of our evaluation assignment as to interfere with or detract in any way from the ongoing educational effort. After all, the welfare of the students is of primary concern to us all!

# FACILITATING THE CHANGE PROCESS IN AGRICULTURAL EDUCATION

by
Daryl Hobbs
Associate Professor
Department of Rural Sociology
University of Missouri

It is perhaps ironical that at a time when social, economic and technological change is occurring at an unprecedented rate that so many groups, organizations, institutions, and agencies are concerned with facilitating change. However, the irony diminishes when we consider that change is itself a principal cause of change.(19, 22, 26, 29)*

Technological change in agriculture has resulted in substituting capital in the form of technology for labor. The result has been that many people have had to make adaptive changes by shifting from agriculture to employment in other sectors of the economy. These individual adaptive changes have resulted in outmigration from rural areas which in turn has caused schools, churches, businessmen and other rural community institutions to make adaptive changes. In each case the farm family, the school, and the community were making changes in response to other changes they had not initiated or were not responsible for. The change to which they responded had been initiated outside the community.

In the field of education Ross identifies 3 general kinds of forces (or changes) for change in educational institutions. These are: (1) changes in the social setting or environment in which the educational system functions, (2) the growing body of knowledge in most fields, and (3) the growing body of educational inventions.[1] In each case these are factors which are beyond the control of any individual school yet influence the decisions made in each school. Changes made in response to these forces are adaptive changes.

---

*The numbers, as used here, refer to the works listed in the Bibliography at the end of the paper.

[1] Donald Ross, "Administration for Adaptability," Metropolitan School Study Council, (New York: Columbia University Teacher's College, 1958), pp. 7,8.

Adaptive change of the kind illustrated will be the principal focus of this paper since it is assumed that one of the reasons why leaders in agriculture education desire to facilitate change is to develop viable programs which take into account the changing social setting and the growing body of knowledge and educational inventions to effectively meet the changing needs of the agriculture education clientele. It will be the purpose of the paper to draw from diffusion research in Rural Sociology and from research on organizational change in Sociology and Education to develop some generalizations regarding implementation and facilitation of adaptive change in education. Before proceeding with an analysis of change in education,a few minutes will be devoted to outlining the adoption process which has been developed by Rural Sociologists. The purpose is to provide a framework for the discussion of educational change.

The observation that people differ in their rate of acceptance and adoption of new ideas and practices has been the subject of major research emphasis in Rural Sociology and related fields during the past two decades. (20, 32, 33, 38, 39) Most of this research has focused on farming practices beginning when the individual becomes aware of a new technique and terminating with his decision to either adopt or not adopt the practice. This process has been envisioned as involving five stages.(33, 38, 39) The process for the individual begins when he becomes aware of a new method, product or idea. Diffusion research has typically found that farmers become aware of new ideas or practices from mass media sources such as farm magazines or radio and TV shows.(7, 20, 23, 33, 38, 39) At this stage he is only aware of the innovation and lacks information and detail about it. If the innovation has some appeal to the individual,he may be sufficiently interested to seek further information about it. At this interest stage mass media are still important sources of information but the farmer may also seek information from agriculture agency personnel, from his friends or neighbors or from commercial sources such as dealers, salesmen, etc.(33, 39) If after obtaining some additional information the individual is still interested in the possible application of the innovation he will seek further information to evaluate the idea or practice in terms of his own situation. In this evaluation stage personal sources of information such as friends and neighbors who have had some experience with the practice or government agencies such as Extension or Vocational Agriculture who have research information concerning application are most frequently sought for information. (7, 20, 33, 39)

If on the basis of the information obtained in the first 3 stages the individual feels that the innovation is applicable and would be of some value to him, he may proceed to try the idea. The trial stage is characterized by small scale experimental use of the idea or practice. If the results of the trial are satisfactory to him he may then adopt the practice and use it on a continuing basis. Although there may actually be a greater or lesser number of stages involved in the individual adoption process it has been found that adopters or practices can distinguish one of the above stages from another and can designate points in time when they went through each of the above stages.(33, 39)

Depending on the individual and the type of practice the above process may take as little as a few hours or as much as several years. In the case of such practices as hybrid seed corn and 2, 4-D the adoption period (from time of awareness to adoption) took as much as 10-15 years for some individuals.(32, 33) Ross (36) points out that the adoption period for some educational innovations may be as long as 50 years. This is a point to which we will return later in the paper.

The difference between individuals in terms of their time of adoption of certain practices has been used to categorize individuals into adopter categories. It has been found that the adoption pattern for most practices tends to follow a normal curve, with relatively few people adopting the practice initially but with the rate of adoption increasing at an accelerating rate until at least 50 per cent have adopted the practice.(20, 33, 39) This normal curve of adoption has been used as the basis for establishing adopter categories. The first 3 per cent (2 standard deviations above the mean) have been referred to as innovators; the next 13 per cent (from 1 to 2 standard deviations above the mean) as early adopters; the next 34 per cent (from 0 to 1 standard deviation above the mean) as early majority; the next 34 per cent (from 0 to 1 standard deviation below the mean) as late majority; and the last 16 per cent (more than 1 standard deviation below the mean) as laggards.(20, 32, 33, 39) This same kind of pattern has been observed among doctors in the adoption of new drugs (6) among schools and school administrators and teachers (25, 27, 28, 36), and for a wide variety of farm practices.(32, 33, 39)

The relative time required for a particular practice to go from inception to virtually complete adoption depends on several characteristics of the innovation. Generally those practices which are low in initial cost and are high in marginal returns will be adopted at a much faster rate than practices or innovations characterized by either high initial costs or relatively low marginal returns.(17, 33, 35, 39) Thus the relative economic advantage is a major factor affecting the rate and universality of adoption.

A second factor affecting rate of adoption is the relative complexity of the idea or innovation. Those ideas which are relatively easy to understand are adopted at a faster rate than those kinds of ideas or practices which are difficult to understand and/or involve a major change of enterprise. Kivlin (17) found complexity to be second only to relative economic advantage as a factor affecting rate of adoption of a large number of farm practices.

Another factor affecting rate of adoption is the visibility of results. Those practices for which the results may be easily observed (such as chemical weed spray) are adopted at a faster rate than practices where the results are less visible.(33)

The rate of adoption of a particular practice is also affected by the extent to which it is divisible. A product or idea which may be tried on a small scale, experimental basis before proceeding to full scale use is generally adopted faster.(33) A chemical weed spray can be used on a small scale basis whereas a bulk milk tank cannot.

The final factor to be considered is compatibility or congruence. That is the extent to which the idea or practice is consistent with, or related to, previously adopted practices. For example, Brandner and Kearl (3) found that adoption of hybrid sorghum proceeded at a much faster rate in a corn growing area of Kansas than in a non-corn growing area even though sorghum was more economically important in the non-corn area. Their conclusion was that the experience of corn growers with hybrid corn lead them to adopt other hybrids faster than those who had had no previous experience with hybrids.

In summary of their research, Brandner and Kearl raise an interesting question which seems to be apropos to the discussion of adoption of educational practices to be presented later in the paper. They question: "Would some of the rapid changes in agriculture in the recent years be explained by a hypothesis that 'willingness to accept innovations' has been evaluated and adopted? Is the general innovator perhaps the farmer who has considered and accepted the idea of using innovations and therefore accepts a wide variety of innovations as congruent with his general appraisal of innovation without feeling a need to study each one as skeptically as he otherwise might?"[2] To draw a comparison, the question may be raised at this point regarding the extent to which schools and educators have adopted a "willingness to accept innovations"?

As mentioned above, the rate of adoption of practices is affected not only by the characteristics of the practice but also by the characteristics of the individual and the social system into which the practice is introduced. Innovators have different characteristics than laggards.

As a generalization from all previous adoption, research innovators are younger, more highly educated, farm larger and more specialized operations, have more favorable attitudes toward science and the acceptance of risk, read more, travel more, attend more meetings and obtain information from more specialized sources than those who are later adopters.(20, 33, 38, 39) It has been found in several studies that innovators often obtain information about new practices directly from research personnel and specialists.(20, 33, 38, 39)

---

[2] Lowell Brandner and Bryant Kearl, "Evaluation for Congruence as a Factor in Adoption Rate of Innovations," Rural Sociology, Vol. XXIX, 1964, p. 303.

Although innovators are characterized by high socioeconomic status, it has been found in several studies that innovators are not usually adoption or opinion leaders on new practices.(20, 23, 33) Rather is the early adopters (who are perceived as following more closely the norms of the locality) which are looked to most often by others as a source of information and legitimation on new practices.(16, 20, 33) For this reason once a particular practice has been adopted by early adopters there usually follows a rapid period of adoption by the early and late majority. Thus from the standpoint of change agents (persons promoting adoption of certain practices) effort expended with adoption leaders is one means of accelerating the rate of adoption for a particular practice or idea. In this way the change agent is able to indirectly affect others who look to adoption leaders for information and legitimation.

Regarding the effect of information in the adoption process some other generalizations from diffusion research which are relevant to this discussion include:

1. Impersonal sources of information are more important than personal sources for relatively earlier adopters of innovations than for later adopters.

2. Earlier adopters utilize information sources that are in closer contact with the origin of the idea than later adopters.

3. Personal influence from peers is more important for relatively later adopters.[3]

To reiterate the point made above, diffusion research indicates clearly that change agents are not only more accepted by adoption leaders but also can have a greater affect on adoption rate by concentrating their efforts on opinion leaders.

The primary purpose of the discussion thus far has been to set forth the framework which has been used to study the diffusion process of ideas and practices. With this framework as a background the following discussion will be focused on the change process in education and factors which retard and facilitate change. Additional research findings from diffusion studies will be presented where applicable to facilitating change in education.

---

[3] Everett Rogers, Diffusion of Innovations, (New York: Free Press of Glencoe, 1962), pp. 313, 314.

A major difference between the adoption of new ideas in education and in farming is that in education the idea is adopted and applied in a formal organization where the practice affects not only the adopter, but also others in the organization as well as those served by the organization. Thus, the potential adopters of an educational innovation whether a teacher or administrator must take into account not only his own preferences but also the preferences and attitudes of other teachers, the students, the public and organizations which are ancillary to the educational structure.

Thus the decision to adopt or not adopt is not one which can be made by the individual without legitimation from all parts of the system in which he functions.

In American society great emphasis is placed on local control of schools. This means that the public through expression of opinion and through delegation of authority to members of the school board are in a position to influence and to loosely control the local school. This creates the circular process whereby the public controls the school but at the same time the school through education is attempting to change the public. The importance of the community as an influencing factor on schools has been emphasized in research by Mort and Cornell (28) and by Duncan and Kreitlow.(9) Mort and Cornell found that attitude of the community toward education was second only to expenditure per pupil as a factor related to quality of education and implementation of changes in education. Duncan and Kreitlow found that the attitude of heterogeneous communities was more receptive to educational change than the attitudes of homogeneous communities. Thus, the interaction between school and community is a structural element which affects change in education. This is a factor which can be ignored by the individual adopter but is difficult for the educational system to ignore. It is probable that the vocational agriculture teacher is especially sensitive to the feelings and attitudes of the public since he perhaps works more directly with a segment of the public than other teachers. This relationship is particularly important since he may be subjected to cross pressures from those who argue that vocational agriculture should be deemphasized and young people discouraged from farming as opposed to those who argue that the need is greater than ever.

Sloan Wayland (40) points out that the formal educational system represents only part of the educational structure. In addition there are ancillary structures which have an influence on the educational system. Included are such systems as PTA, NEA, FFA, and textbook publishers. Each of these groups and organizations although having a general interest in education also have some vested interest which may cause them to resist changes in education. Thus, these systems are also a part of the social setting in which educational systems function and thus may be enhancing or impeding factors in educational change.

A further comparison between adoption of a new idea or practice by a farm operator and adoption of an innovation in education reveals a lack of a formalized research and diffusion function for educational innovations. In education there is no direct equivalent to the Agriculture Experiment Station and Extension system to generate and recommend new educational practices. Most research on adoption of farm practices has been concerned with those practices which have been recommended (and thereby legitimized) by the Agriculture Experiment Stations. Although research in educational innovations is carried on, there is no comparable system for recommending and disseminating the research to potential adopters.(21)

Thus, the fact that schools are institutions which are interdependent with a community social system and which have no formalized structures for generating and communicating research on innovations has many implications for facilitating change. The remainder of the discussion will be devoted to these implications.

In discussing these implications some additional propositions about change may aid in guiding the analysis.

1. Innovation in education as in any system involves changes in the social organization of the system. Every system has norms to guide behavior in situations. A change in the system usually results in a change of these norms. Following from this proposition,

2. Innovation is deviation. By virtue of the fact that an innovation is a new way of performing some purpose it is different from existing methods and norms governing their application.

3. Adoption of a practice is a means to achieve some other end. Generally the innovation is considered by those who develop and recommend it to be a more efficient means of achieving the ends or objectives of the system. However, without a clear definition of the end or goal it is not possible to evaluate the relative effectiveness of means to be employed.

Thus an innovation in education may be considered as a deviation from existing methods which will have some effect on the social organization of the school system and which, if applied, will enable the system to more effectively accomplish it's objectives.

It is generally accepted that technological change has been beneficial to society. It has resulted in a higher standard of living, more leisure time, improved health, and increased life expectancy. Although many theories have been proposed to account for technological change it is generally agreed that for technology to be developed and adopted there must be some system of providing rewards to the innovator and adopter.(1) In our society these rewards are usually in the form of increased status, greater income, and more leisure time.

In farming,for example, the individual who adopts an innovation may expect to increase his profit or make a difficult job easier to perform. Regardless of the nature of the advantage the adopter bears the risk (of possible failure) but also receives the benefit. This advantage may be considered as a major incentive to adopt new practices. (35)

However, despite the advantages which accrue to the developer and adopter of new technology there are certain factors which cause resistance to change. As pointed out by La Piere: "Since the beginning of the industrial revolution those in almost every occupation - law and politics have been major exceptions - have experienced a more or less constant devaluation of their skills and knowledge as a consequence of technological change, of organizational changes within the occupation, or both."[4]

How do these factors encouraging innovation compare with those resisting the innovation function in education? In the educational system there are few, if any, rewards provided by the system to serve as an incentive to innovate.(22, 25) In fact the reward system in education may have the opposite effect since most salary scales are based on a combination of experience and amount of formal education. This procedure is not necessarily dysfunctional since it has been found that both these factors are positively related to quality of education in a school system.(28) However, going back to La Piere's comment concerning devaluation of skills and knowledge as a result of change in methods and technique, it can be observed that educational innovations tend to discount the value of experience and previously acquired knowledge. The hypothesis could be generated then that persons in education who have experience could be expected to resist changes which discount the value of experience. There is no question that craftsmen resist mass production and automation.

While there are few positive rewards for innovation in education neither are there many negative sanctions for failure to utilize new methods. In farming the individuals who have not adopted new techniques and practices have not remained in farming. It is doubtful if there is (or should be) any equivalent penalty for the laggard or non-adopter in education. However, this factor does have implications for the acceptance or rejection of innovations.

---

[4] Richard T. La Piere, Social Change (New York: McGraw-Hill Book Co., 1965), p. 194.

In addition to sanctions (positive and negative) provided directly by the educational system the ancillary structures and the community also play a part in establishing the norms of teacher role performance. As cited previously research has indicated that the attitudes and characteristics of the community are significant factors in educational change and innovation.(9, 25, 28, 36) In their study of Pennsylvania schools Mort and Cornell (28) asked teachers their opinions concerning the rules for success of a teacher in their community. In order of the number of times mentioned the responses were: (1) good teaching (2) understanding of students (3) active in community affairs (4) cooperativeness (5) character and personality and (6) morality. All these factors indicate a consciousness of community norms as a factor in the success of the teacher. Among the factors mentioned least often by the teachers were factors related to innovation such as initiative, personal adaptability, energy and vision.

The important consideration from the standpoint of change is that the teacher's and the school administrator's perception of the community's possible reaction to change may cause reluctance to innovate. The term perception is used because there is generally a lack of formalized mechanisms to objectively evaluate public reaction prior to making a change. Lacking this information a school administrator or teacher may be reluctant to make changes because they feel the community would react negatively. Whether the reaction would be negative or not is somewhat irrelevant if the teacher or administrator believes it would be. As stated by I. I. Thomas: "If men define situations as real, they are real in their consequences."[5]

In diffusion research one of the factors which has been found to affect the rate of adoption of new ideas and innovations is communication with, and influence of peers. As mentioned previously, once adoption leaders have adopted a new idea the rate of adoption tends to increase at an accelerating rate. Farmers are in close association with each other and are in a position to observe the practices being followed by other farmers. However, especially in vocational agriculture the teacher is specialized with no direct equivalents at the local level. Thus the lack of opportunity for day to day interaction with peers eliminates an important means of communication about innovations. Mort (27) suggests that lack of communication, either with change agents or peers, is an important factor retarding the adoption of innovations in education.

In addition to merely conveying information about innovations personal communication is also effective in reinforcing the decision of an individual. It has been found in social-psychological and diffusion research that personal influence is more important in uncertain situations (such as uncertainty about reaction of administration or public) than in clear-cut situations.(33) As suggested by Lionberger, "..reinforcement of an adoption decision may be necessary for continued use of an idea or practice particularly if local support of colleagues and important reference groups is not forthcoming. In a highly change-oriented society this may not constitute a problem because peer group support is readily accorded as for successful use of innovations in farming. This may be less true in educational innovation than in agricultural development."[6]

---

[5] Robert Merton, Social Theory and Social Structure (Glencoe, Illinois: The Free Press, 1959), p. 421.

The sources utilized by teachers for information on new ideas in education were reported in the results of a study by Mort and Cornell.[7] In order of the number of times mentioned by the teachers the sources of information were: (1) professional literature (2) teaching experience (3) observation of other schools in the system (4) college or university (5) study of pupil needs and interests (6) contact with other teachers in system (7) summer school (8) general literature (9) conventions, conferences, etc., and (10) original ideas. As may be noted peer group influence (6) apparently is much less important among teachers than has been found among farmers.

As discussed in relation to the adoption of farm practices the characteristics of the practice also affect the communicability and rate of adoption of a practice. Many of the innovations in agriculture have been material innovations which can be purchased and thus readily adopted. It has been found in diffusion research that material changes are adopted at a more rapid rate than non-material.(33) The idea that material change occurs more rapidly than non-material is a basic proposition of Ogburn's well-known theory of cultural lag.(29) It is Ogburn's thesis that adoption of technological change "causes" or forces adaptive change in social institutions.

In education many or most of the innovations involve non-material changes. Such changes are not only more difficult to communicate but also require a change in behavior of the adopter. In addition the results of application of non-material changes are usually less visible and consequently more difficult to evaluate. Adoption of a chemical weed spray,for example,is a relatively simple adoption process which can be easily evaluated. This type of practice can be compared with adoption of overhead projectors for classroom use. In both cases they are simply an easier, more effective way of doing the same job. Their use involves no basic change in behavior.

---

[6] Herbert F. Lionberger, "The Diffusion of Innovations with Applications from Agricultural Research to Implemented Change in School Systems." Paper presented at the Association for Supervision and Curriculum Development Seminar on Strategy for Curriculum Change at New Orleans, Louisiana. January, 1965, p. 25.

[7] Paul Mort and Francis G. Cornell, American Schools in Transition. (New York: Bureau of Publications, Teacher's College, Columbia, 194 , p. 264.

However, most educational innovations are more complex which adds to the difficulty of diffusing, understanding and properly utilizing the innovation. It was mentioned earlier that Kivlin found that the relative complexity of the practice was second only to relative economic advantage as a factor determining rate of adoption of practices.(17)

Thus the fact that educational innovations are more complex and are primarily ideas rather than objects is a factor which undoubtedly retards the rate of adoption.

In addition to diffusion research, studies of organizational change have identified many factors which may cause resistance to change.(5, 41) These studies have been primarily of employee reaction to changes adopted by the employer. In summary of the findings it can be generalized that there is least resistance to organizational change when the persons affected have been involved in making the change.(5, 41)

In both Zander's study and in a similar one by Coch and French it was found that when the reason for the change, the purpose to be accomplished and how the change was to be implemented were discussed with employees prior to initiation that the changes were accepted with little or no resistance. By involving the employees in this fashion they had the feeling that they had had a voice in making the change decisions. As pointed out by Zander, "Resistance can be expected if the nature of the change is not made clear to the people who will be influenced."[8]

This raises the question about the process of legitimation for educational changes. As indicated earlier the nature of the relationship between public and school means that certain segments of the public are also influenced by educational changes. Based on the above generalization of Zander this suggests that in education certain relevant sectors of the public may need to be consulted and informed prior to making a change. This would reduce the possibility of public resistance to it. Of course the need for such public legitimation would depend on the magnitude of the change.

Zander also concludes that "Resistance can be expected when those influenced are caught in a jam between strong forces pushing them to make change and strong forces deterring them against making change."[9] This generalization seems to be particularly applicable to agriculture education. As suggested earlier there may be cross pressures on the vocational agriculture teacher as a result of the changes taking place in agriculture. As a result,rather than stimulating change these cross-pressures may result in a resistance to change.

---

[8] Alvin Zander, "Resistance to Change: Its Analysis and Prevention." (Advanced Management, Vols, XV, XVI, January, 1950), p. 11.

[9] Ibid.

A previous proposition stated in the paper was that adoption of an innovation is a means to achieve an objective. From the standpoint of facilitating adoption of innovations it is important to first define the problem or the objective to be accomplished.(36) With agreement on the objective, agreement on the means to be employed and the function of innovations can be facilitated. Resistance to a change may result simply from a difference in understanding of the objectives to be accomplished.

To this point major emphasis in the paper has been devoted to a discussion of factors which may retard acceptance of change in education. The logic for this approach is that facilitating change must begin by first identifying factors causing resistance and then subsequently overcoming these resistances.

Therefore following from the preceding discussion several generalizations can be derived which pertain to implementing or facilitating change in education.

In discussing the framework employed in research on diffusion of farm practices it was pointed out that the rate of adoption of farm practices tends to follow a normal curve and that the rate of adoption increases at an increasing rate after the practice has been adopted by adoption or opinion leaders. To the change agent this finding would seem to suggest a number of important considerations:

1. In the adoption process greatest effort by the change agent is required initially. Once the adoption process has begun the two-step flow of information helps to perpetuate the process if potential adopters are in communication.

2. The rate of adoption may be facilitated if initial effort by the change agent is concentrated on adoption or opinion leaders. Not only do adoption leaders influence others to adopt but they are more easily reached by change agents.

3. Who are opinion leaders within the system? It is obvious that the change agent cannot focus his efforts on opinion leaders unless he knows who they are.

The nature of the educational system however modifies these considerations to a degree. Opinion leadership and the influence of opinion leaders is dependent upon interpersonal communication. As emphasized earlier, teachers do not have the opportunity to communicate with teachers in other systems as farmers communicate with their neighbors. This implies that before interpersonal communication can be relied on as a means of disseminating information about educational innovations that some enabling mechanism may need to be provided.

Interpersonal communication is important not only as a means of disseminating information but also in reinforcing adoption decisions. Initial adoption of an innovation by an innovator may be deviant behavior, however, adoption of the practice by adoption leaders serves to legitimize the innovation and make it normative. Thus for others who follow in the adoption process, adoption is not considered a deviation but as following an accepted practice.

These considerations lead to the specific suggestion that the adoption of innovations in education could be facilitated by providing opportunities for interpersonal communication (other than annual conferences) between teachers from different systems and even within the same system oriented toward the discussing of new ideas and practices and their application in achieving system goals.

Such meetings would also provide the opportunity to teach a consensus on the objectives of a particular program such as vocational agriculture and thereby emphasize the need for adaptive change to accomplish these objectives.

Some changes in education can be adopted by a teacher on his own whereas other changes may require the decision of the administrator or school board or a higher authority. Although the implication is obvious, the change agent should determine initially who has the authority to make the adoption decision. In this regard, Wayland makes the point that, "Successful innovations are more likely to be achieved when initiated by administrative officials, not only because of the power of their office, but also because they are in a position to handle the system problems inevitably associated with innovation in an ongoing system."[10] Miles also suggests that "...successful innovation at the local school level is likely to require work with the entire organization as such rather than solely with individual teachers."[11]

The need for legitimation of educational innovations in order to facilitate their adoption touches on many of the factors discussed in the paper. It was pointed out that in agriculture the Agricultural Experiment Stations not only generate innovations in farming but also perform a legitimation function by recommending the practice. To illustrate this legitimation function of the Ag. Experiment Stations nearly 50 per cent of a sample of Iowa farmers agreed with the following statement, "I feel the research information put out by agricultural colleges is just as good to go on as if I had tried it on my own farm." (14) It was emphasized earlier that even though research on educational innovations is being performed there is no system comparable to the

---

[10] Sloan Wayland, "Structural Features of American Education as Basic Factors in Innovation." Matthew Miles, Editor. (New York: Columbia University Teacher's College, 1964), p. 612.

[11] Matthew B. Miles, Innovation in Education. (New York: Bureau of Publications, Teachers College, Columbia University, 1964), p. 647.

Ag. Experiment Stations and Extension to recommend, legitimize and disseminate the information. Since such legitimation from knowledgeable sources has been found to positively affect the rate of adoption of farm practices (33) it suggests that a similar function could positively influence the adoption of educational practices.

Since education is a public institution, the public also becomes an important consideration in the legitimation of educational changes. It was pointed out previously that public reaction to an educational change is probably an uncertainty to the teacher or administrator contemplating change. This uncertainty probably stems from the fact that there are few formalized mechanisms for gauging reactions prior to making a change unless, of course, the change is one which involves the public directly such as a bond issue, or school reorganization.

Since the possibility of negative public reaction may be a factor causing reluctance to change, it is suggested that vocational agriculture teachers could be encouraged to legitimize contemplated changes in their programs with key agricultural leaders in the community. By utilizing key leaders in this way the teacher could gain their support and add to his confidence in making a change. Such legitimation, of course, would be necessary or important only for major changes in the program.

In addition to legitimation with the vocational agriculture clientele it goes without saying that legitimation with administrators and fellow teachers is also important to insure their support of the proposed change.

There are several other implications of adoption research in agriculture and education which suggest considerations for educational change agents.

Just as in farming not all innovations apply to all school systems. The type of enterprise, the size of the operation and the ability of the farm operator are some of the factors which determine whether or not a particular practice is applicable for a particular farm or not. Knowing this, the effective agricultural change agent concentrates his efforts on those who are potential adopters. In education the size of the school, the type of physical facilities, the education and background of the teacher and the type of community are all factors which determine whether an innovation is applicable. The educational change agent in developing a strategy for change would need to determine the potential adopters of the innovation and concentrate his efforts on these.

Adoption research has also found that different kinds of information sources performing different functions are employed at varying stages of the adoption process. To the change agent this finding suggests the need to develop a plan for change which incorporates a number of means of communication, each planned to provide the type of information required at each state of the adoption process. These means of communication should also be selected on the basis of access to the individual or group who makes the adoption decision.

The communication strategy developed to facilitate the adoption of innovations needs also to take into account the characteristics of the practice. It was pointed out previously that many educational innovations are complex and require major changes in the behavior of the adopter and in the system in which it is adopted. This suggests the importance of intensive and personal communication as a part of the strategy for change. The potential adopter not only needs to be influenced to try the practice but may require training to effectively use the innovation. If the idea is accepted but implementation is unsuccessful this can retard the adoption of the practice by other systems. Thus the strategy for change may need to incorporate plans for training on application of the innovation to ensure its successful adoption.

The final consideration to be mentioned concerns the overall change orientation of both change agents and target systems. A previous quote included in this paper raised the question: "Would some of the rapid changes in agriculture in recent years be explained by a hypothesis that 'willingness to accept innovations' has been evaluated and adopted? Is the general innovator perhaps the farmer who has considered and accepted the idea of using innovations and therefore accepts a wide variety of innovations as congruent with his general appraisal of innovation without feeling a need to study each one as skeptically as he otherwise might."[12] The implication of this question is emphasized by Rogers who suggests that, "change agents should be more concerned with improving clients competence in evaluating new ideas and less with simply promoting innovations per se."[13] As suggested above not all innovations are applicable to all educational systems. However, educational systems do have in common the need for adaptive changes to keep pace with societal and community changes. Thus the consideration is offered that change agents may be more effective in the long run by developing on the part of the target system a recognition not only of the importance of a particular change but of the need for continual evaluation and change to keep abreast of societal changes.

In conclusion the key points emphasized in this paper lead to the generalization that change in educational systems can be expedited by first identifying the probable sources of resistance to change. Once these have been identified a strategy can be directed toward overcoming these resistances. The factors discussed in the paper as considerations for the educational change agent can perhaps be summarized by the suggestion that education rather than promotion per se may be the most effective means of facilitating change in educational systems.

---

[12] Brandner, loc. cit.

[13] Rogers, op. cit., p. 280.

## Literature Cited

1. Barnett, H. G. Innovation: The Basis of Culture Change. McGraw-Hill Book Co., Inc. New York. 1953.

2. Benne, Kenneth. Deliberate Changing as the Facilitation of Growth. In Warren G. Bennis, Kenneth D. Benne and Robert Chin. The Planning of Change. Holt Rinehart and Winston, New York. 1962. pp. 230-234.

3. Brandner, Lowell and Bryant Kearle. Evaluation for Congruence as a Factor in Adoption Rate of Innovations. Rural Sociology. 29: 288-303. 1964.

4. Burchinal, Lee G. Difference in Educational and Occupational Aspirations of Farm, Small-town and City Boys. Rural Sociology. 26: 107-121. 1961.

5. Coch, Lester, and John R. P. French, Jr. Overcoming Resistance to Change, pp. 233-250. In Maccoby Newcomb & Hartley. Readings in Social Psychology. Henry Holt & Company, Inc. New York. 1958.

6. Coleman, James, Herbert Menzel and Elihu Katz. Social Processes in Physicians Adoption of a New Drug. The Journal of Chronic Diseases. 9: 1-19. 1959.

7. Copp, James H., M. L. Sill and E. J. Brown. The Function of Information Sources in the Farm Practice Adoption Process. Rural Sociology. Vol. 23. No. 2. June 1958.

8. Drucker, Peter F. The Educational Revolution. In Amitai and Eva Etizioni. Social Change. Basic Books Inc. New York. 1964. pp. 236-242.

9. Duncan, James A. and Burton W. Kreitlow. Selected Cultural Characteristics and the Acceptance of Educational Programs and Practices. Rural Sociology. 19: 349-357. 1954.

10. Fuguitt, Glenn V. Career Patterns of Part-time Farmers and Their Contact with the Agricultural Extension Service. Rural Sociology. 30: 49-62. 1965.

11. Gibbs, Jack T. Human Ecology and Rational Economic Behavior: Agricultural Practices as a Case in Point. Rural Sociology. 29: 139-151. 1964.

12. Havens, Eugene A. Increasing the Effectiveness of Predicting Innovativeness. Rural Sociology 30: 150-165. 1965.

13. Hobbs, Daryl J. Identification and Application of Theoretical Constructs Useful to Resource Development. In Proceedings of Mid-West Rural Sociologists Seminar on Resource Development. Lincoln, Neb., Dec. 1963.

14. Hobbs, Daryl, George M. Beal and Joe M. Bohlen. The Relation of Farm Operator Values and Attitudes to Their Economic Performance. Rural Sociology Report 33. Dept. of Economics and Sociology, Iowa State University, Ames, Iowa. 1964.

15. Kaldor, Donald R., Eber Eldridge, Lee G. Burchinal and I. W. Arthur. Occupational Plans of Iowa Farm Boys. Res. Bull. 508. Iowa State University Ag. Exp. Sta., Ames, Iowa. 1962.

16. Katz, Elihu and Lazarsfeld, Paul F. Personal Influence. Glencoe: The Free Press. 1955.

17. Kivlin, Joseph E. Characteristics of Farm Practices Associated with Rate of Adoption. Ph.D. Thesis. Pennsylvania State University. University Park. 1960.

18. Klonglan, Gerald E., George M. Beal and Joe M. Bohlen. Family Adoption of Public Fallout Shelters. Rural Sociology Report No. 30. Dept. of Economics and Sociology. Iowa State University. Ames, Iowa. 1964.

19. La Piere, Richard T. Social Change. McGraw-Hill Book Co. New York 1965.

20. Lionberger, Herbert F. Adoption of New Ideas and Practices. Iowa State University Press. Ames, Iowa. 1960.

21. Lionberger, Herbert F. The Diffusion of Innovations with Applications From Agricultural Research to Implemented Change in School Systems. Paper presented at the Association for Supervision and Curriculum Development Seminar on Strategy for Curriculum Change at New Orleans, Louisiana. Jan. 1965.

22. Loomis, Charles P. Social Systems: Essays on Their Persistence and Change. D. Von Nostrand Company, Inc. Princeton, N. J. 1964.

23. Mason, Robert G. The Use of Information Sources in the Adoption Process. Rural Sociology. Vol. 29. March, 1964.

24. Merton, Robert. Social Theory and Social Structure. The Free Press. Glencoe, Ill. 1957.

25. Miles, Matthew B. Innovation in Education. Bureau of Publications. Teachers College. Columbia University. New York. 1964.

26. Moore, Wilbert E. Social Change. Prentice-Hall, Inc. Englewood Cliffs. N. J., 1963.

27. Mort, Paul. Studies in Educational Innovation from the Institute of Administrative Research: An Overview. In Innovation in Education. Matthew B. Miles (ed.) New York: Columbia University Teachers College. 1964.

28. Mort, Paul and Francis G. Cornell. American Schools in Transition. New York: Bureau of Publications, Teachers College, Columbia University. 1941.

29. Ogburn, William F. On Culture and Social Change. Otis Duncan (ed.) The University of Chicago Press. Chicago, Illinois. 1964.

30. Parsons, Kenneth H. Institutional Innovations in Economic Development. In Optimizing Institutions for Economic Growth. Ag. Policy Inst. North Carolina State. Raleigh, North Carolina. 1965.

31. Photiadis, John D. Critical Examination of Change Programs in the Light of a System in Equilibrium. Rural Sociology. 28: 352-363. 1963.

32. Rogers, Everett, The Adoption Period. Rural Sociology. 26: 77-82. 1961.

33. Rogers, Everett. Diffusion of Innovations. Free Press of Glencoe. New York. 1962.

34. Rogers, Everett M. Social Change in Rural Society. Appleton-Century Crofts, Inc. New York. 1962.

35. Rogers, Everett and Eugene Havens. Adoption of Hybrid Corn: Profitability and the Interaction Effect. Rural Sociology. Vol. 26, pp. 409-414. 1961.

36. Ross, Donald. Administration for Adaptability. Metropolitan School Study Council. Columbia University Teachers College. New York. 1958.

37. Straus, Murray A. Societal Needs and Personal Characteristics in the Choice of Farm, Blue Collar, and White Collar Occupations by Farmer's Sons. Rural Sociology. 29: 408-25. 1964.

38. Subcommittee for the Study of Diffusion of Farm Practices, North Central Rural Sociology Committee. Adopters of New Farm Ideas: Characteristics and Communication Behavior. North Central Regional Extension Publication No. 13. East Lansing: Michigan State University. Ocrober, 1961.

39. Subcommittee for the Study of Diffusion of Farm Practices, North Central Rural Sociological Committee. How Farm People Accept New Ideas. North Central Regional Publication No. 1. Ames. Iowa State University Extension Soc. Nov., 1955.

40. Wayland, Sloan. Structural Features of American Education as Basic Factors in Innovation. In Innovation in Education. Matthew B. Miles (ed.) New York. Columbia University Teachers College. 1964.

41. Zander, Alvin. Resistance to Change: Its Analysis and Prevention. Advanced Management. Vols. 15-16. January, 1950. pp. 9-11.

# FACTORS AFFECTING THE ADOPTION OF EDUCATIONAL INNOVATIONS BY TEACHERS OF VOCATIONAL AGRICULTURE WITH ATTENDANT IMPLICATIONS FOR FACILITATING CHANGE

by
James E. Christiansen
Consultant, The Center for Vocational and Technical Education
The Ohio State University

Dr. Hobbs has focused our attention in this seminar on ways in which the change process in agricultural education may be speeded up. He has succinctly summarized the results of research efforts in other disciplines, has drawn together, and has tied them to research completed in education. He has raised questions about "legitimatizing" educational changes, about the different problems encountered in facilitating changes involving institutions and those involving individuals, and has pointed out that most attention in education has been directed to creating changes in the school system rather than to the individual within that system.

For the next few minutes, let us focus attention on factors affecting the adoption of educational innovations by individual teachers of vocational agriculture as revealed by one study conducted in Ohio. Then, too, it would be appropriate to highlight some of the implications arising from this study for programs of supervision and teacher-education in agricultural education. This particular study was conducted to determine the relative influence exerted by different sources affecting the adoption of specific educational innovations among experienced teachers of vocational agriculture in Ohio who had been identified as being members of specific innovation-adopter categories. It involved 101 teachers representing 39 per cent of the vo-ag teachers in Ohio who had taught at least three years. Persons who had taught at least three years were selected to ensure that those studied would have had an opportunity to be influenced by and to utilize sources of educational innovations other than those inherent primarily in the pre-service program of teacher education. These teachers had taught 15.7 years on the average and were teaching in districts representative of agricultural, educational, and socioeconomic conditions within the state. Five practices were studied in detail based on the following criteria:

1. The practice was one which could be conducted by the teacher rather than by the institution.

2. The practice was one which could be adopted or rejected without having to consider administrative approval, major budgetary limitations, community sanction, class schedule or work schedule changes, or school board policy.

3. The teacher was free to adopt or reject the practice himself.

The practices selected pertained to the professional aspects of the teacher's work involving educational innovations. They did not apply to agricultural or subject-matter innovations.

Teacher-innovativeness was measured by means of an adoption scale made up of individual innovativeness scores derived from twenty-seven innovations involving two factors, namely, the length of time it took a teacher to adopt an innovation and the number of innovations adopted that could have been adopted. The total rankings of the individuals on the basis of their innovativeness scores were then arrayed and classified into the five commonly accepted adopter categories of innovator, early adopter, early majority, late majority, and laggard on the basis of the two parameters of the normal distribution, namely, the mean and the standard deviation as explained by Dr. Hobbs earlier today. The method used to determine innovativeness avoided the inadvertent interjection of subjection bias that might have arisen if outside judges had ranked teachers on the degree of innovativeness that they possessed.

As another phase of the study, a two-way, forced-choice comparison-of-pairs instrument was used to determine whether or not supervisors in each supervisory district could identify innovativeness among teachers of vocational agriculture. Teacher were also asked sociometric questions to determine if different degrees of innovativeness were perceived among teachers by their peers.

Before examining those factors affecting the adoption of educational innovations by these Ohio teachers, let us examine some of the general characteristics of teachers in each of the adopter categories enumerated by Dr. Hobbs. In other words, let us dissect this teacher-specimen in-so-far as innovativeness is concerned.

1. The more innovative the experienced teacher was, the greater the amount of education he was likely to have obtained in a formal credit program since his initial certification. Innovators had earned 44.7 quarter hours of credit whereas laggards had earned 18.3 quarter hours. The other three categories decreased progressively in terms of credit earned, being less than the innovators and more than the laggards. The innovators also had earned 3.7 times more quarter hours of college credit than had the laggards for each year of teaching experience accumulated.

2. The more innovative the experienced teacher was, the greater the amount of money he was likely to have invested in professional growth.

3. The more innovative the experience teacher was, the greater the number of professional visits to departments of instruction other than vocational agriculture he was likely to make on his own initiative.

4. It was also true that the more innovative the experienced teacher was, the greater the number of purposeful visits to other departments of vocational agriculture he was likely to make on his own initiative.

5. The more innovative the experienced teacher was, the greater the number of non-local professional meetings he was likely to attend. This was true both for meetings attended within the state outside the country

in which the teacher taught and for meetings attended outside the state. The innovators, of all the adopter categories, were the most cosmopolite in meetings attended.

6. The more innovative the experienced teacher was, the greater the degree of opinion leadership which he was likely to hold. This was true both for elective offices held by teachers within the three years prior to the collection of the data and nominations made by fellow teachers as to whom they would go for advice before using a new educational practice and from whom they would be willing to "borrow" a new teaching practice on the strength of the fact that they had observed a teacher using the practice. It was also found that all of the early adopters in the study were named by fellow teachers as being persons from whom they would "borrow" a new practice being used or to whom they would go for advice concerning new educational practices. This was not true of the other categories and bears out previous research that the early adopters are the greatest opinion leaders.

7. The more innovative the experience teacher was, the fewer the number of years of total teaching experience and the fewer the numbers of years of teaching experience in the present school system the teacher was likely to possess. These findings were found to progress directly from the most innovative to the least innovative, but the differences among the different adopter categories were not significant at the .05 level. Innovators had taught 12 years on the average, those in the majority 15.5 years, and laggards 18.4 years. Innovators had taught 8.7 years in the present school system, those in the majority about 10.6 years, and laggards 14.8 years.

8. The more innovative the experienced teacher was, the younger he was likely to be. The mean age of each of the adopter categories increased progressively from the innovator through laggard categories. However, significant differences among the five adopter categories did not exist. The range for all categories was only 5.0 years.

9. Laggards difinitely read fewer professional publications regularly than did the other adopter categories. However, the differences among the other four categories were minor and statistically significant differences among all five categories did not exist. Only 38 per cent of the teacher in the population sampled read their professional journal, The Agricultural Education Magazine, regularly.

10. The more innovative the experienced teacher was, the more likely he was to adopt a complex innovation, such as color dynamics, which had not been actively promoted by state staff personnel. Along this same line, the most commonly cited reason for adopting the five practices investigated was that it was implied by state staff

personnel that this was the thing to do. The second most common reason was that the teacher had observed it being done somewhere else and thought that it was worth doing. Significant differences among adopter categories did not exist at the .05 level when the Chi-square test was applied to the reasons given for adopting the practices investigated. Not being convinced of the value of a practice was the most common reason given for not adopting a particular practice. Again, differences did not exist among categories in this respect.

11. Significant differences among adopter categories did not exist in respect to the length of time from awareness to adoption of the five practices studied. It was true, however, that the more innovative the individual was, the shorter was the period of time lag between awareness and adoption generally speaking.

12. As would be expected, the mean number of innovations adopted by teachers decreased progressively from the most innovative to the least innovative adopter category. However, the differences among the adopter categories in this regard were not statistically significant at the .05 level. The innovators, on the one hand, adopted 23.0 innovations; the laggards had a mean adoption rate of only 10.7 innovations.

13. The more innovative the experienced teacher, the more likely he was to have classes for out-of-school youth and adults in operation. This finding was statistically significant at the .05 level.

14. The more innovative the experienced teacher was, the greater the use he was likely to make of impersonal sources of information.

15. The more innovative the experienced teacher was, the greater the use he was likely to make of sources outside of agricultural education.

16. Significant differences among adopter categories did not exist in regard to the use of non-local sources of information.

17. The more innovative the experienced teacher was, the greater the use he was likely to make of sources of information requiring large personal investments in time and money. The exception, though, was the innovator. He tended to be a "tightwad" in terms of spending his own money to make use of available sources of information.

18. Members of the early majority category spent more personal money on materials for their own instructional programs than did members of the other categories. The laggards spent the least, followed by the innovators, late majority, and early adopters in that order.

19. The level of instruction expenditure per pupil in a school district did not furnish a clue as to where one could expect to find the more innovative or less innovative individuals. No appreciable differences among adopter categories existed.

20. Teachers in all adopter categories possessed little occupational experience outside the teaching field. Differences among adopter categories did not exist which were significant. The mean number of years of experience outside the teaching field for all categories was 1.6 years.

Let us now examine some of the forces and factors affecting the adoption of educational innovations by teachers. For example, it was found that:

1. The different sources providing information influencing the adoption of the five educational innovations studied varied according to the adopter categories to which the teachers belonged but did not reach the .05 level of significance. In analyzing the use of the different sources, a definite progression in frequency of use by adopter categories was revealed in eleven of the twenty-eight sources used. They were as follows:

    a. The more innovative the experienced teacher was, the more likely he was to use university staff members in agricultural education as sources of information.

    b. The more innovative the experienced teacher was, the more likely he was to use university staff members, other than those in agricultural education or education, as sources of information.

    c. The more innovative the experienced teacher was, the less likely he was to use state staff supervisors in agricultural education as sources of information.

    d. The more innovative the experienced teacher was, the more likely he was to use original ideas.

    e. The more innovative the experienced teacher was, the more likely he was to use graduate level courses as sources of information. Not a single laggard reported that a graduate level course furnished information for any stage of adoption of any of the five practices investigated. However, it was not determined if the laggards had been enrolled in courses that would have provided information about the five practices studied.

    f. The more innovative the experienced teacher was, the more likely he was to use publications in professional education as sources of information.

g. The more innovative the experienced teacher was, the more likely he was to use local research as a source of information.

h. The more innovative the experienced teacher was, the more likely he was to use teachers in the local school system, other than teachers of vocational agriculture, as sources of information. The only exception was that of the innovators; none of them reported using this source.

i. The more innovative the experienced teacher was, the less likely he was to use the annual conference for teachers of vocational agriculture as a source of information.

j. The more innovative the experienced teacher was, the more likely he was to use cooperating teachers he had known or with whom he had worked as sources of information. The more innovative 50 per cent of the teachers used this source four times more often than did the least innovative 50 per cent.

k. The more innovative the experienced teacher was, the more likely he was to use local farmers as sources of information.

Other findings concerning the use of different sources which influenced the adoption of innovations revealed that:

a. Popular publications such as magazines and newspapers were used by members of the late majority as sources of information than by any other category.

b. With the exception of the laggard, the less innovative the teacher was, the more likely he was to use non-credit workshops, including district meetings, as sources of information. Members of the late majority used such sources 2.6 times more frequently than did the laggards.

c. With the exception of the innovator, the more innovative the teacher was, the less likely he was to use other teachers of vocational agriculture as sources of information. The innovator, though, used teachers other than vo-ag teachers twice as often as did the early adopters.

d. Experienced teachers in the two majority categories used administrators or supervisors in the local school system as sources of information twice as much as did the other three categories.

e. Teachers in the early majority used in-service workshops or clinics in the local school system as sources of information more than did the two adjacent categories. Neither innovators nor laggards reported using this source.

2. Experienced teachers of vocational agriculture are influenced by different sources at the awareness stage, the interest stage, and the adoption stage in the innovation-adoption process. Sources of information which were more important in making teachers aware of new practices than in providing additional information or influencing teachers to adopt the practices were:

   a. Teachers in the local school system, other than vocational-agriculture teachers

   b. Cooperating teachers known by the teacher

   c. Local sales, business, and service people

   d. Visits to other departments of vocational agriculture

   e. Popular publications such as magazines and newspapers

   f. Graduate level courses

   g. Annual conference of teachers of vocational agriculture

   h. University staff members in agricultural education

   i. University staff members other than in education or agricultural education

   j. Undergraduate courses

   k. Childhood teachers

   Those sources which were of most importance in providing additional information or interest in a given practice were administrators or supervisors in the local school system, local farmers, published results of educational research, commercial publications and advertisements, non-credit workshops for teachers of vocational agriculture, including district meetings, other teachers of vocational agriculture, and state staff supervisors in agricultural education.

   Those sources of information which were most influential in causing teachers to adopt educational innovations were local research, publications in professional education, and in-service workshops or clinics in the local school system.

3. Eight of the nine most frequently used sources of information as reported by teachers were directly associated with the field of agricultural education. These sources made up 76.5 per cent of all sources of information used. In descending order of frequency of use, the

sources were state staff supervisors in agricultural education, department of agricultural education staff members, annual vocational agricultural teachers' conference, other teachers of vocational agriculture, non-credit workshops for vocational agricultural teachers including district meetings, visits to other vocational agricultural departments, graduate level courses, and cooperating teachers. The one source of information not directly associated with agricultural education, but ranked fifth in importance, was that of administrators or supervisors in the local school system.

All nine of these sources just mentioned were used by members of all adopter categories. In addition, four other sources of information were used by members of all adopter categories. They were commercial publications and advertisements, university staff members other than those in education or agricultural education, local farmers, and local research. It was interesting to note that commercial publications and advertisements were used almost twice as often as publications in professional education for sources of information.

4. Something else was found when considering age and opinion leadership among the teachers investigated. Two structures were found to exist. A small group of thirteen younger teachers in the total sample of 101 existed who did not consider as opinion leaders those persons so considered by the majority of the teachers. Instead, those persons were considered more cautious or conservative and these thirteen "young Turks" with an average age of 30 years went to peers their own age for advice.

5. Another factor affecting the adoption of educational innovations by teachers was that those who entered the teaching profession after a practice was no longer being actively promoted and made highly visible by several different sources of information or influences simultaneously were less likely to adopt that particular practice.

6. Then, too, it was found that the more innovative the teachers were, the more likely they were to recognize that they were more innovative than their peers. Coupled with this, it was interesting to note that 2.3 times more early adopters than the next highest categories perceived themselves as actively attempting to convince others about new practices in agricultural education. In running this self-perception role down, it was found that 72 per cent of the early adopters told other teachers about a new practice. The question is thus raised, is a person's self-perception of his role a factor which affects the adoption of innovations?

From the material which has been presented thus far, what implications exist for programs of teacher-education and supervision? In the speaker's judgment, the following implications are worthy of consideration.

1 If experienced teachers are influenced by different sources at the awareness stage, the interest stage, and the adoption stage in the innovation-adoption process, state staff personnel cannot afford the luxury of

depending on one or two sources to lead to the adoption of desirable innovations. By identifying all important sources, state staff members can utilize those sources extensively at the time and in the order in which their use will result in the greatest effectiveness and provide the greatest impact in influencing teachers to use new educational innovations. Also, an implication exists that systematic planning needs to be carried out to use these sources most efficiently. Then too, the implication exists that securing change must be considered a continual process involving multiple sources of information and influence.

2. Since the more innovative teachers are likely to use impersonal sources of information, the development of more bulletins, instructional aids, teaching hints, and similar sources of information will be of value in speeding up the adoption process involving the more innovative individuals. A converse implication is that personal contacts cannot be forsaken when working with the less innovative individuals in the late majority and laggard categories.

3. Since the more innovative teacher is likely to make greater use of sources outside of agricultural eduation, persons in the position to do so--school administrators, supervisors, teacher-educators--should provide an opportunity for the more innovative teachers, especially those in the early adopter category, to use and take advantage of such sources. Making it easy for teachers to use such outside sources would facilitate learning about new practices which possibly might be applicable to the school or classroom setting. Since the majority of teachers do not use outside sources, it is important that this means of injecting and diffusing new ideas obtained from outside the profession through the more innovative teachers be kept open. Those in the majority and laggard categories will follow the lead and actions of the more innovative teachers.

   However, because most teachers tend to use overwhelmingly large sources of information within their own field, such sources can serve as the vehicle of change in the change process. Another implication present is that personnel of the joint state staff can concentrate their efforts on purposive change within the framework of agricultural education.

4. The question is not answered whether a person is more innovative because he has more postgraduate education or seeks more education because he is more innovative. But the implication exists that since a correlation exists between the two, a permissive climate should be fostered by school administrators and state staff personnel which encourages teachers to continue their education without placing hurdles in their path. An example of such a hurdle might be a requirement that teachers on twelve month contracts could absent themselves from their job only once in three years for purposes of securing additional education.

Another implication exists that finding out how much education teachers have obtained in a formal, postgraduate program of education will provide some hint as to how the more innovative individuals or the less innovative individuals may be identified. Thus the amount of postgraduate education possessed can serve as a general characteristic of innovativeness.

5. It will be remembered that the more innovative teacher is likely to visit more vocational agriculture departments, other departments of instruction, and attend a greater number of non-local professional meetings than the less innovative teacher. It is readily apparent that the more innovative person does actively expose himself to or seek out those sources of information which are removed from the realm of the day-to-day aspects of his job. Consequently, he is likely to make his teaching more lively and vital. Therefore, an implication exists that it would be wise for school boards and school administrators to establish policies permitting and encouraging short-term professional improvement activities. As an example, school policies might permit such an activity as providing a paid substitute to free a person for a day to observe how a teacher in another school is conducting a specific program.

6. If it can be substantiated by further research that the more innovative teacher is likely to be a younger teacher, the implication is present that if state staff personnel wish to seek out new ways of doing things that are being used in the field, they could consider finding out what the "better" younger teachers are doing.

7. If it can be substantiated by further research that the more innovative teacher is likely to be one with fewer years of total teaching experience than the average, an implication exists that state staff personnel need to give more responsibilities and opportunities for roles in leadership development to the younger teachers, especially those in the early adopter category. For example, some of these teachers could be involved as "demonstrators" at conferences and in the field. Another implication which is present is that, if substantiated by further research, increasing teachers' salaries solely according to length of tenure may not most equitable. Then too, years of teaching experience might be another characteristic which may be useful in identifying innovativeness.

8. It will be recalled that the various sources which provide information that influences the adoption of educational innovations used by teachers tended to vary according to the adopter categories to which those teachers belonged even though the .05 level of significance was not attained. If substantiated by further research, an implication exists that state staff personnel need to determine purposefully the degree of innovativeness held by teachers. This needs to be done in order for state staff members to utilize those sources which can be most effective in bringing about change on the part of teachers in in various adopter categories.

9. It was shown that district supervisors can distinguish the relative degree of innovativeness possessed by teachers provided that they thoroughly understand the concept of innovativeness and its part in the change process and that they are well acquainted with the activities of the teachers within their respective districts. Since this is so, district supervisors could consciously and deliberately use persons in the different adopter categories according to the role they play and the position they hold among their peers to bring about desired, purposeful changes in agricultural education. For example, concentrated efforts could be made to utilize early adopters as cooperating teachers because of the high opinion-leadership role they play. Besides the early adopters, efforts could be made to include key members of the late majority in pilot programs since the latter individuals apparently exert a large degree of influence among their categorical peers as they maintain a larger number of face-to-face contacts within the category than they do with members of the more innovative categories.

10. The more innovative teacher is likely to be influenced by the cooperating teacher under whom he received his experience as a student teacher. Because these more innovative teachers tend to be the opinion leaders within the state, an implication exists that those persons selected as cooperating teachers should be the "pace-setters" for the profession in terms of new practices. In other words, their deeds are likely to be multiplied and to exert influence beyond the face-to-face contacts they have with student teachers working directly with them.

11. It was concluded that opinion-leadership is applicable to a specific age span and does not encompass the complete range of ages of individuals within the professional group. Since younger teachers hold lesser opinions of respect about teachers accepted as opinion leaders by the majority of teachers than they do of individuals within their own age categories, an implication exists that state staff members should identify these emerging opinion leaders among this younger group of teachers and involve them on committees, in programs of pilot centers, and in other positions or activities where the influence they exert with their own peers can be used to lighten the efforts of the state staff in bringing about change.

12. Experienced teachers in the less innovative categories are influenced by their peers to a greater extent than are more innovative individuals. The implication exists that in attempting to wholesale efforts to create change on focusing attention on and working through opinion leaders in the early adopter categories, state staff personnel should not forget to include key members of the less innovative categories in the framework by which persons are made aware of, given additional information on, and influenced to adopt specific innovations. These less innovative persons need to be involved because of the direct personal influence they exert on peers within their respective adopter categories.

16. It was also concluded that the less innovative the experienced teacher is, the less likely he is to adopt a given practice if he perceives that more training in the use of the practice is needed. One implication present is that for innovations perceived as requiring additional training to be widely adopted, in-service training programs stressing help in the use of such practices need to be implemented, especially for the less innovative teacher. Another implication existing is that state staff personnel should not be too critical of the failure of teachers to adopt certain practices until they have had an opportunity to become familiar with and proficient in the use of that practice.

17. Since, it cannot be assumed that as new teachers enter the field they automatically are likely to adopt an already "established" practice which is considered desirable by state staff personnel, state staff personnel may periodically need to re-emphasize desirable practices by the use of a wide variety of sources of information and influence in order to maintain continual acceptance.

18. It was mentioned earlier that a given practice is most likely to be adopted by experienced teachers because it is implied by state staff personnel that this is the thing to do. Consequently, an implication exists that state staff personnel could be more positive in their recommendations and exert greater leadership in actively attempting to bring about specific change within a state's program of agricultural education. An additional implication exists that "innovational packaging" by state staff personnel could bring about faster rates of adoption. It would seem that through demonstration, preparation of guidelines, concerted effort by both teacher-educators and state supervisors, and other means of visibility that teachers could be made aware of and convinced of the value of a given practice.

19. We have seen that experienced teachers who are opinion leaders among the earlier adopters actively and knowingly attempt to influence other teachers. It would seem, therefore, that state staff personnel could benefit by actively encouraging these teachers to use a given practice. They could be involved in establishing demonstration centers. The actions of these opinion leaders in attempting to convince others could help the attempts of state staff personnel to bring about change through the trickle-down process. Monetary incentives could be provided by state staff personnel to school districts for use in departments of vocational agriculture to encourage teachers to use a given practice.

20. It was found that administrators and supervisors within the local school system exert relatively great influence on the adoption or non-adoption of educational innovations. An implication exists that state staff personnel and local school administrators or supervisors need to understand each other's objectives as well as work together in bringing about desirable practices in a local system if increased effectiveness is to result through the change process. Apparently, this is especially true of the "average" teacher in the majority categories.

21. The annual conference exerts relatively great influence at the awareness stage of the adoption process having been used 1.7 times more often at the awareness stage than at the adoption stage for those practices actually adopted by teachers. Could an implication exist that the real purpose of the annual conference for teachers of vocational agriculture sponsored by the state's supervisory staff may be to make teachers aware of new developments, methods, techniques, and concepts rather than to "train" or "up-grade" them in specific methods or techniques?

22. And lastly, it should be pointed out that the more innovative the experienced teacher is, the more likely he is to use non-mandatory sources of information. For example, because the more innovative teacher tends to use university staff members in agricultural education as sources of information and the less innovative teacher tends to use state supervisors as sources of information more frequently, an implication exists that both groups of personnel should work on promoting or upgrading the use of educational innovations within the state. Because of the visibility that promotion by more than one change agency provides, another implication exists that both groups should work out a planned program for "packaging" the adoption of innovations through simultaneous upgrading, promotion, or in-service education.

In conclusion, it is hoped that these insights into the adoption of educational innovations by teachers of vocational agriculture in one state may provide some food for thought as you work with the teachers in your respective states.

# A STRATEGY FOR CHANGE

by

S. S. Sutherland
Emeritus Professor of Agricultural Education
University of California, Davis

Research should have as one of its primary objectives, the pointing of directions for change, and revealing facts and data which document the need for new directions. It would seem fitting, therefore, in the final stages of a seminar devoted to research and development that we turn our attention to ways and means of implementing the changes indicated by our research.

The time relationship between problem-oriented research and the emergence of problems requiring research is an interesting subject in itself, but one which we shall treat only in passing. A short time ago federal legislation suddenly cut off the supply of bracero labor from Mexico which had furnished the crews for harvesting California's huge tomato crop. Almost at once work was begun on developing machines which would take over the harvesting job, and to one of my friends was given the task of designing an entirely new type of tomato that would lend itself to machine harvesting. All he was asked to do was to develop a tomato which had all of the desirable characteristics of the present canning tomato, but also the additional ones which would make possible their being harvested by machine, such as an entirely different shape, a tough skin, and a variety which would all ripen at about the same time. By working night and day, growing two experimental crops of tomatoes a year--one in California in the summer and one in Mexico in the winter--he is finally getting close to his objective. Significant to me, however, is his statement based upon his experience in a situation in which the need for change was evident and accepted before the needed research was done. This was his conclusion--"When you have a situation needing research, it is already too late to research it"! You may not agree with his assessment of the time relationship between research and the need for change, but perhaps most of you would agree that you'd prefer to have the opportunity to do research thoroughly and without pressure rather than in a crisis or crash situation, and to have the pertinent facts and data before initiating change.

With the exception of this one detour, I propose to limit my discussion strictly to the assigned subject--"A Strategy for Change"--and to treat it from the point of view of you who, as leaders, shoulder the responsibility for initiating proposed changes and following them through to fruition and acceptance. In so doing, we shall take a look at the factors which mitigate against change, the feelings and attitudes of people which tend to obstruct change; our clientele--those whom we must persuade to accept change--and, finally, attempt to pull these items together into a procedure for initiating and gaining acceptance of proposals involving change.

My specific assignment for this paper is, and I quote, "From your accumulated experience and wisdom (sic) what suggestions do you have for state staffs in accelerating the speed of needed changes?" Therefore, from this accumulated experience, this alleged but highly questionable wisdom, generously supplemented by gleanings from research reported and conducted by Rogers[1] on diffusion of innovations and Abelson[2] on "Persuasion," I'll proceed with this assignment.

First let us look at obstructions to change, the factors which mitigate against change, the attitudes and feelings which often prevent acceptance of change, and try to relate them to our task of speeding up adjustments in agricultural and vocational education.

A major obstruction to acceptance of change is *fear*--fear of the unknown, fear of the consequences of change, fear that the changes may affect one adversely. Even a professional person, a district supervisor, a teacher often feels more comfortable in the stable situation he has dealt with and with which he has become familiar and becomes alarmed at the propsect of a new situation and fearful of his ability to cope with it.

Closely related to fear is our *dislike of an ambiguous situation*--one which is not clearly defined, and one which we do not clearly understand. In contrast to the proponent of the proposed change, the junior staff members, teachers, local administrators to whom he must present his plan will likely have had little opportunity to study intensely or think through his proposal, and perhaps no opportunity to do so. As a result they probably fail to understand it fully, nor do they sense or understand their role in it. Is it any wonder that under these conditions they may not immediately accept it?

A third block is *distrust*--distrust of the motives back of the proposal and especially distrust of the motives of the one *making* the proposal--the change agent. People tend to identify the change with the person who is proposing it. If they believe and trust him they are likely to accept; if they distrust and fear him or his motives they tend to transfer this attitude to the proposal with which he is identified.

A fourth inhibitor, of course, is *tradition, inertia,* an instinctive hesitancy on the part of most people (and educational institutions) to embark on a course which is radically different from that followed by their colleagues. For years the agriculture curricula of most of the land-grant colleges across the country resembled each other so closely that it was almost laughable. Course titles, sequence, prerequisites, even units of credit differed little whether listed in catalogues from the Universities of Minnesota, Texas, California, or Pennsylvania. Now a few intrepid deans are breaking away from the pattern and introducing new curriculum patterns, but those of you who have been involved in such tasks will surely testify to the strength of tradition. We in vocational education are probably not entirely immune to this virus, either.

---

[1] Everett M. Rogers, *Diffusion of Innovations*, (New York: Free Press of Glencoe, 1962).

[2] Herbert I. Abelson, *Persuasion*. (New York: Springer Publishing Company, 1959).

To these four blocks of resistance, Rogers, as a result of his own research findings and those of others studying innovation, adds another block which must be considered. This is the apparent fact that where there is a wide difference in status between the change agent and his clientele both communication and acceptance are impeded. The implications here, of course, are obvious--that the path of communication and acceptance should follow the so-called chain of command, both down and up; that a state director, for example, rather than going directly to teachers, should work instead with his immediate staff to gain their acceptance and with his immediate superior to gain his.

In addition to these inhibitors, which undoubtedly do not comprise a complete list, there are other pertient facts to be considered and which have a bearing on acceptance of new ideas. For example, it has been stated that educated persons tend to be more receptive to change than those less well educated; that the educated person is likely to change as a result of reason and facts rather than to be swayed by emotion; that we tend to accept milder changes more readily than radical ones, and gradual changes more easily than abrupt ones.

Building on this groundwork, then, what should be our own strategy for change? How can we, when research has identified and documented the need for change, initiate and gain acceptance of proposals to bring this change into being?

There are at least three ways of effecting change: (1) the autocratic, authoritarian; (2) the completely democratic approach; and (3) a middle of the road procedure which combines some of the elements of both the autocratic and the democratic.

The first method consists merely of an executive order that on such and such a date certain specified rules, regulations, and procedures will go into effect and will be followed--period. While most of us dislike this method when applied to us, it has its place, especially when the change is required as a result of new state or federal legislation or policy.

In theory, the democratic approach, in which all of those affected by the change have an opportunity right from the start to think through, discuss, plan, and implement the change together, should be the most effective for it brings into play somewhat equal involvement of the group who are directly concerned. The plan, then, becomes their own instead of yours. In practice, it has obvious limitations and frustrations. The democratic procedure, excellent as it is, is notoriously slow and laborious, and often frustrating.

Since group planning is such a difficult process the middle of the road procedure often is a good compromise. In this process the planning of the proposal is done either by an individual or a very small group. It is planned as completely as possible, documented by facts, objectives clearly established, arguments pro and con listed, and then presented to the rest of those affected, not necessarily for acceptance or rejection, but for reactions and suggestions. It is important in this procedure that it be made entirely clear that the plan presented is not presented as a finished product, will not necessarily be put into effect in its present form, nor is any time table presented. Rather one must emphasize that the suggestions, additions, deletions agreed upon as a result of these reaction-discussions will be incorporated into the plan before it is put into effect. It should be obvious that this promise must be adhered to strictly and to the letter. A dean emeritus of the College of Agriculture where I labored said in presenting proposals he always made it a point to leave a few "i's" undotted and a few "t's" uncrossed because from his experience people had to find something to criticize, so he gave them a target on purpose and one that wouldn't cause much damage. Finally, when the plan is presented for reactions, suggestions, and criticisms do not defend it. To do so is fatal at this juncture. Simply make sure that there is agreement concerning the suggestions and record them for consideration, and probably incorporation in the plan.

While this should not be construed to be a recommendation of this middle of the road plan of action over the purely democratic or the purely authoritarian, it certainly merits consideration. As Rogers concluded, we as change agents should be more concerned with improving the ability of our client to evaluate new ideas and less with out and out promoting and drum-beating. Furthermore,this method may be used equally well with the four groups with which we must be concerned in a strategy of change; our superiors who have the decision and veto power, our immediate staff of assistant supervisors or teacher educators, local teachers, and local administrators.

Now as to the proposal itself and its essential elements. Whether a plan is presented for immediate concurrence or for evaluation and criticism, the hoped-for outcome, of course, is eventual acceptance. To obtain this acceptance careful consideration must be given to removing or nullifying the roadblocks and inhibitors discussed earlier in this paper. Therefore it should include these elements:

1. The objectives, the outcomes, the hoped-for accomplishments of the change must not only be spelled out clearly, but also must be such as to win the immediate and unquestioned approval of those affected. (Unless your staff and your teachers accept the purpose--the goal, you may be sure they will not accept the change.) If this

step is omitted or not done well, your plan is doomed for failure regardless of how well the rest of it is done. These outcomes should be expressed in terms of accomplishments which will benefit your clients--teachers and assistants--which they value, and for which they can sense the need. Done in this way, it should serve to dispel any distrust of you or your motives and their natural fear of the consequences of the change. Again, this may well be the single most important step in your strategy for change.

2. State and describe the proposed change clearly, present all pertinent facts and data upon which it is based. Use all possible aids to enable your clients to visualize it and to understand it. This should serve in a measure to remove some of the ambiguity implicit to change and enable them to see just exactly what is involved.

3. Present evidence, facts, and arguments, both for and against the proposed change. Really analyze it. This is especially important if you anticipate severe opposition or criticism. Doing so may serve to allay their fears that you and your planning committee may not have considered all aspects and consequences of the proposed change. If critical opposition is not anticipated, arguments against the change may be omitted, but it seems safer to include them, since they should aid your hearers in making a fairer evaluation.

At this stage, if you can show that other states or agencies have already successfully adopted this pattern you may be able to remove still another roadblock.

4. Gear the wording of your proposal to your clientele and their known characteristics, attitudes, opinions, and values. Use their language--not yours.

5. Close with a brief recap of the most important points supporting the need for this change and the most important arguments in its favor. Appeal for their careful evaluation and sympathetic consideration of the proposal, and reiterate your pledge that any changes upon which they agree will be incorporated in it.

Perhaps the most common and the most fatal error in trying to gain acceptance of change is to move too rapidly--so rapidly that one's clients just can't follow and keep up. The planner--the change agent--tends to forget that in his planning, he has had, of necessity, to think through in detail and at length all aspects of his proposal; that he understands it so well and is so strong a proponent himself, that he simply cannot see why others do not understand it and support it equally well. He thus becomes impatient with their apparent stupidity and contrariness and tries harder and harder to push his ideas through. Instead he should remember that time will doubtless work in his favor and that one can rarely force acceptance. So in the words of an old-time popular song, "take it slow and easy." Stuart Chase in writing on the strategy of change summed it up by saying, "To overcome resistance, don't use a club, use a fly rod!" Those of you who know my avocation will appreciate my use of this illustration, I know.

Another strategy described by Chase might be worth a trial sometime. He suggests that if you have a change to propose to your superior-your boss-that you try a little reverse psychology on him. Suppose you feel that a change in your reimbursement system would be advisable, but don't know quite how he might react. So in some relaxed moment, perhaps at lunch, you just make a supposedly casual remark such as, "You know, I believe we should come up with a better reimbursement system than the one we have and one that is more equitable." Then, says Chase, just drop the subject. According to the author it is surprising how often, perhaps a week or a month later, your boss will come to you and suggest, "You know, I believe we could come up with a better reimbursement system. Why don't you have a try at it!" With that kind of an entree, who could miss? You just plant the idea, let it grow and he often comes to believe it was his. As to whether I have ever used this technique, I have no comment.

As a final strategy, be prepared with alternatives if it appears probable that there is too much opposition to your complete proposal, either because it represents too great a change, too radical a departure, or any of a number of reasons. Among the alternatives one could reasonably suggest is that it be tried on a pilot basis, that preliminary steps be started now, with the rest delayed for further study, or that it be approved "in principle" with the details to be given further consideration and thought before final approval is given.

I have not related the strategy for change in this presentation specifically to your tasks as leaders in agricultural education, and I have taken this stance advisedly as I have full confidence in your capabilities as professionals to make these applications yourselves. May these hints prove of value to you in implementing the changes for which your research reveals a need, and may you avoid the trap described by a colleague of mine who said that his office was the greatest repository of unpublished and unused research in existence. While the task of the innovator, the change agent, is often a frustrating and discouraging one, it also can be and often is a most rewarding one. Let's use our findings to trigger more and greater advances in vocational education in agriculture.

# Other Center Publications

"Guidelines for State Supervisors in Office Occupations Education."
1965 Business Clinic

A Report of a National Seminar on Agricultural Education, "Program Development and Research."

"Guidance in Vocational Education." - Guidelines for Research and Practice.

"Research Planning in Business and Office Education."

"Evaluation and Program Planning in Agricultural Education."

"A Report of a National Seminar on Health Occupations Education Centers."

"A Report of a National Seminar on Cooperative Education."

A Report of "A National Leadership Seminar on Home Economics Education."